The Builder.

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LATELY, it has been stated by those who are in good positions for judging, that great progress has been made since 1851, in art as applied to manufactures, and to the decoration and furnishing of houses. We propose to say a few words on the matter. The Department of Art is beginning to disseminate knowledge of correct principles amongst designers, and even amongst manufacturers. There is still, however, much to be done ere the manufacturer will have courage to freely test whether that which is good in principle will not continuously please, and whether the same form that is beautiful and æsthetically correct, may not be that which will acquire the highest mercantile value,—for, that disposition of mind which exemplifies itself through changes of fashion, is really unfavourable to the sense of beauty. Assuming, as we can readily do, that the union of high art and manufacture is compatible—whilst necessary to the intended dissemination of the benefits resulting from art,—we must regret that the public demand either has not definitively spoken yet for results from correct principles, or that the character of the demand is not readily seconded by the supply. It is still scarcely possible to furnish a house, however plain your intended work, without violating at every turn some sense of propriety, and offending some cherished perception of beauty. Indeed, the more simple the scheme of decoration and the desired ornamentation, the more difficult is the attempt. The cause is not any want of variety in patterns: it would be one part of our business to remark that the variety is already too great,—as in paper-hangings.

The excessive desire for novelty is precisely one of the deductions from the sum of satisfaction with the existing state of taste. To satisfy the desire, a multitude of designs are produced in succession by the same hands, and in every combination of colour, without, as it would appear, any thought of what would be *the most* beautiful combination.

Still, whatever the nature of the demand may be, the contrast presented by it to the taste of a preceding period is quite manifest. Formerly, those who coveted a reputation were so excessively nervous about doing wrong, that they did *nothing*; and, though it may be said that it is better to be inoperative than to be actively bad, the principle of venturing nothing would stand in the way of *progress*; in which consists all excellence,—social, moral, and intellectual. Whereas, within the last few years, amongst people of every degree, there has sprung up the desire of embellishing that "kinde of private princedome" which, according to the often-repeated words, now on the title-page of our volume, may well deserve "to be decently and delightfully adorned;" and from which desire—spite of all drawbacks—spring some of the chief social virtues. Even that desire, however, will not be attended with unmixed good, if accompanied with any *pretence*, or if there be the eventual dissatisfaction following from the habit that people have of deluding themselves into the idea that they are pleased with certain forms and ornaments, whilst candid and unprejudiced consideration would show them that they were not so. For, without technical knowledge, people would often come to right conclusions on some of the chief art-questions,—if they could divest themselves of preconception. Thus, much of what is called "ornament" in furniture and fittings, would strike them as the very reverse of *ornamental*. The presence of such "ornament" will usually be traced to pandering on the part of the designer to the notion that quantity of work constitutes something that is beautiful: for, judging by the tactics of the manufacturer, he finds it commercially advantageous to put forth this *quantity*, even though a second glance would show it to owe little to mind and hand, and to be intrinsically bad.

Recently-completed works of interior decoration and furnishing may be ranged under one of two classes. Under the one head, we would put such works as are presumed to be from new designs; and under the other we would put such interiors as present a combination of old designs and manufactured articles. We will take the latter—the more common case—first.

It is assuredly to be regretted that so little has been done to produce household fittings moderate in price, and at the same time unobjectionable in form and decoration. We will suppose that you are furnishing a room. Of course, as in every good design, your work being viewed as a whole, it is to have its points of greater and lesser prominence, and its relieving surfaces undecorated. Proceeding on such principle, we will say you come to the fireplace. You want a fender, and it suits your scheme to have it good, but undecorated. Where can you procure such an article? You will require it made to order, just as much as in the case of the most ambitious production. Fenders may be bought for 7s. 6d.—but such fenders all attempt as much as those costing 3*l.*; and of course, failure in the effect which they profess is borne upon the face of the object. So we say, in everything that the room requires; everything pretends to be ornamental, yet is obviously not so. And everything procurable, even supposing it good *per se*, is designed as a distinct thing, instead of with some regard to the fact that it will be a part of a whole. What artist would think of painting a picture where every figure should seem to be striving for prominence?

Again, in carpets and paperhangings, it is quite correct that they should be treated as backgrounds: but how difficult it is for an architect to achieve this apparently simple result. The variety of patterns is wonderful; taste is, perhaps, not wholly wanting; yet it is most difficult to procure what you need. Provided the architect can accomplish that much, he is generally afterwards overruled by others. His employer seems to regard the selection of paperhangings as a prerogative to be surrendered on no account whatsoever. We are inclined to think that it could be predicted, that (what may be found from experience), the proprietor of the house will invariably reject any pattern selected and laid before him. Nothing will satisfy but the overhauling of some hundred pieces. "Why, sir," said an intelligent paperhanger to an architect, about one of these selections, —"I have noticed over and over again, that gentlemen get so bewildered with the lot of patterns that pass before them, that sometimes they end by choosing actually the very worst of the lot." Instead of any surprise at such a result, it would not be consistent with ascertained facts in physics if it were not so. It has been conclusively shown by M. Chevreul, that the eye in looking at colour after colour, is gradually undergoing change,—so that the character of each colour is altered; in short, the colour is vitiated. An analogous result is unquestionably produced in form and proportion; indeed, the recognition of it constitutes the whole art of design. In Professor Cockerell's lectures, the effect of different dimensions upon one another, has been lucidly explained. On every ground, therefore, it is vain to expect under the present system, all the success in the interiors of ordinary houses, that an architect *might* produce, even using manufactured decorations and fittings. It is impossible to draw the line anywhere between what some may think architects' work and the completely furnished apartment,—for there can be no separation in effect. In practice, indeed, it is found very difficult to carry out the elaborate supervision which might be required; and this will bring us to the next point that we have to notice,—the influence of the class called "decorators." Only let us premise, that we could suggest means of meeting the difficulty,—under somewhat amended relations between master and pupils.

It must be admitted that the qualifications of decorators have greatly increased of late years. The names of some individuals, heads of large establishments, will at once occur to our readers. It would be very unfair to rank these with the upholsterers of a few years back. In some cases, they are truly artists; and have studied their subject long and attentively, both in England and on the Continent. In other cases, the principals have in their employment designers of great talent,—who are sometimes foreigners,—as still are the best workmen. Where the system fails is in cases where the principals have not commenced their original attention to the subject with the training that an architect has undergone. The latter, if his progress teaches him anything, feels constantly the importance of the now recognised æsthetic principles, and more especially the importance of structural truth. Designs for decorations of rooms by foreigners (as shown by the works in the late Architectural Exhibition), were mostly very greatly wanting in the recognition of this principle. In some of the works by Messrs. Galli and Cotti, the errors of the late Italian school were prominently exhibited,—painted architecture (never to be viewed otherwise than as a weak substitute) being mixed up with the true pictorial; and figures so disposed as to mimic living figures, being placed adjoining the figures in the *picture* of a different motive. In many works by others, painted imitations of pilasters, mouldings, and other architectural forms were freely introduced. There was, however, in the majority of the works, besides skill of hand, an unusual amount of fancy. Designers who have been educated on the Continent, indeed, seem to us to excel our own in the extent of their resources, or their fancy. They, however, fail where the others are under advantages,—viz. in the application of such structural principles, as here there has been the opportunity for learning through the medium of the study of Gothic architecture.

The pursuit of several different styles, it would scarcely be consistent with much that has been said on the subject in these pages, did we not also consider an error,—though in furniture it is usually regarded as a venial one. The Gothic style alone seems not to come responsive to the hand of a continentalist. The absence of effort of any sort in the style by the chief exhibitors, and Mr. Kuekuck's painted imitation of a rose window as a ceiling decoration, exemplified what we refer to.

Mr. Prignot's version of the Louis XVI. style deserved notice, both from the skill and taste manifested in those of his drawings which were in that manner, and because we omitted to refer to it specially, in those articles of the "Recent History of Architecture," which related to the progress in France of distinct style in interior decoration. It differs from the Louis

XV. style, inasmuch as it has a decided rigidity of character. It is, therefore, a better style, having regard to the element of structural truth. It has many points of resemblance to the much earlier distinctive style of the Renaissance. It is further important just now, as being promoted in the application or revival of its character, by M. Fortoul, who, as the French Minister of Public Instruction, has more opportunities of influencing the condition of our art, than are within the scope of individuals in England.

Whilst, however, we think that the Gothic style of interior decoration was inadequately represented at the Architectural Exhibition, we think it needs infusion of fresh spirit.

The great drawback to the success of works of interior decoration as produced, we say, is that the *architect* does not bring his knowledge to bear on decoration, and that the decorator lacks that regard for structure which would preserve him from many glaring errors. Through want of encouragement, insufficient allotment of time and interference by the client, and inadequate return, the architect has been gradually giving up an essential part of his profession. Is he to remain falling short of one large portion of his proper art; or, what step can he take to get the confidence given to others who follow a trade? He maintains the professional position, whilst the public choose even his workmen as their *artists*. What is the reason of this? Is it that the architect, as at present educated, cannot be an artist; or is he unnecessarily oppressed with details of business (the old story of the duties of a commander swamped under the duties of an office-clerk)? or is his peculiar professional calling valueless, or merely not understood? He is forbidden by the Institute to contract, or have any commercial interest in any class of works,—though there may be architects, who do not pay implicit deference to the restriction, in the case of decoration. If the restriction is of value, should it not be applied to all persons, and under all circumstances? However, the decorator by trade contrives to get a degree of license, which it seems never the system to give to architects. We hear of those who are generally quite unlimited as to expense, and who will submit to no dictation. They *supply* everything; and they design all new fittings, such as gas-lights, just as may seem to them requisite. In one house at Manchester, the gaseliers alone have cost as much as a fair-sized house. When the work is done the bill is sent in, and paid without complaint. What, we ask, is the position of the architect's profession compared to this? How does the difference arise? Is the architect to be positively the worse off for the maintenance of a professional *status?*

Whilst his proper position is that of chief artist of a building, and sole controller of the works, is he thus to be made to resign really the bulk of his real duties to one who, whatever his merits, is after all tradesman and contractor, as well as artist? The question involves the very existence of our profession. We crave, rather than express, opinion on the subject. We only point to what seems a strange anomaly.

Our own doctrine as to the importance of interior decoration as a positive branch of professional architecture, has been adhered to from a very early period in the course of this journal. We contended for the comprehensiveness of architecture as a subject, and in favour of attention to decorative art by architects: and in our pages it was shown that the forms and principles of decorative art, and art-manufacture, were to be, and had ever been deduced from architecture and structure; and that we said long before such views were given forth by their present chief promoters, and of course before a Department of Art had been dreamed of. We claim no merit for any discovery: no one assuming to have the slightest insight into architectural principles, or art-history, could do so: but it does seem, that even yet the application of structural principles, no less than the true relation of nature to art, requires to be pressed upon the attention of many persons.

To apprehend, as some appear to do—even yet—that mechanical resources, and new inventions are antagonistic to art, would betray a crudeness of judgment, which no educated *architect* should be guilty of. What is done in cast work, may be inferior to what has been done in wrought; but surely, that is by those who have not invented designs suited to casting, but have preferred to promulgate that certain things their new process could not do. It is this very "confession of weakness," as we have heretofore called it, that has been the error in all that has been done in interior decoration, with the aid of manufactures: and it is most erroneous to disclaim against the manufacture, simply because some have chosen to turn it to a wrong account.

That which it is most important just now to do, is to moderate the desire for excessive ornamentation, or the imitation of it, in every article of furniture or decoration. Paintings and sculpture forming the most beautiful decoration for the walls of a room, nothing should be introduced which can detract from them: and so long as ordinary costume in a room has neither colour nor lustre, it seems even doubtful whether great richness can be displayed on the walls without some want of harmony arising from that particular.

Novelty also—be it added to all that we have been saying of late on that head—is a necessary element in art, but not the only, and perhaps not the highest one.—We would have the love of art, a thing such as "age" could "not wither, or custom stale." That result will be contemporaneous with decline of *fashions;* and then at length people will comprehend what is so often quoted, but so little understood, that,—

"Taste, never idly working, saves expense."

ON BRICKS AND BRICKWORK.*

IT appears to me that the subject of bricks and brickwork can not be uninteresting to an inhabitant of London, for London is essentially a brick-built city, and however little any one may be interested in building every one is interested in the view from his window, or in his walk; and as the architecture of the city is the people's property, it behoves them not to neglect it, but to use every means in their power to have something to compensate them for the green fields and God's light and air, which the houses take from them. With the bulk of the dwellings of London, it is no question whether they shall be of brick, of freestone, or of marble, but whether they shall be of brick or plaster. The advocates of cement have been, after a long struggle, compelled to give up any rational defence for its use, as a means of imitating stone; but they now tell us that they advocate its adoption as a material as honest in its way as brick or marble, and on the ground that it has a bright look far superior to the dingy brick. But take any plaster with which we are acquainted in London, and were it not for its yearly coat of stone colour, it would exceed the worst brick in dinginess, for the colour of buildings in London very slightly depends on the colour of the material employed, but on its complexion; and plaster is more apt to hold the soot than brick or stone. In every other respect it is inferior, for who can contemplate any extent of the deadest brick wall, without it calling up reflections on the wonderful industry of man, who has piled up these small cubes, of 3 inches in height, to 100 feet, and the skill he has exhibited in placing them so that they stand for ages; while the plaster hides from us all history of the building's life, and from its being only a thin coating, it is incapable of receiving any deep impressions, while its liability to crack, and to be acted on by the weather, and its susceptibility to injury from external violence, renders it an unfit material for work that is to endure. Not that I object to carefully-*executed* plaster as a means of decoration, when used in small pieces and in sheltered situations, to throw out parts of the building, nor when used as a ground for painting, as a building then becomes one vast picture in colour, or chiar'oscuro. I only object to plaster when used unpainted to cover a whole front, or as an imitation of some other material.

Being, I hope, agreed on the superiority of the commonest brick to the best plaster, we will, if you please, just consider something of the history and application of brick, before we make any further remarks on its capabilities; and in speaking of brick, I intend to include every variety of the plastic, keramic, or potter's art — every material that from a plastic state is hardened or vitrified by fire, including glazed and unglazed tiles and earthenware. Bricks must be divided into two classes, the burnt and the unburnt; and though the unburnt would hardly appear worthy of mention in a country like England, so subject to heavy rains, and with so humid an atmosphere, still the enormous structures that have been raised in unburnt bricks in countries in many respects far more civilized than our own, must entitle them to mention. The manner of forming these raw bricks we learn from various authorities and specimens; but we may take the account of Pliny as about as good a one as any that we have. In book xxxv. cap. 49, he says:—

"Bricks are not to be made from a sandy nor from a gravelly soil, much less from a pebbly one, but from a chalky and whitish or from a reddish soil; but if from a sandy, let it certainly be from a stiff one. They are best made in spring, for they get cracked in the summer. They are not good for buildings, unless they are two years old, and the loam should be well steeped before they are made." This would lead us to suppose that the Romans did not use straw or reeds like the Assyrians or Egyptians. It may be remarked, that it does not seem improbable that the moulding of unburnt bricks was discovered in a few generations after the *Creation*. The impression of the human feet on soft ground at once strikes the attention of savages. We see it represented in the picture-writing of the Mexicans, and we hear of it being used as a means of tracking the enemy by the American Indians. When its susceptibility of receiving impressions was once noticed, man could not fail to observe how it hardened in the sun; clods that had fallen in on a river bank might readily suggest its use in masses, and the nest of the swallow or the house of the beaver might have given the pattern of a complete hut. Be this as it may, we find that unburnt bricks impressed with a pattern were used at an early period: some of the oldest remains of building are in that material.

The Nineveh palaces were built of unburnt bricks, formed of loam and straw; the walls were in many instances 15 feet thick, lined with the sculptured slabs of alabaster now in the Museum; and it is the falling in of these walls, and their being again converted into earth, that has so wonderfully preserved these sculptures.

Xenophon speaks of the city "Larissa being

* The following paper was read at the Architectural Museum, Canon-row, April 21st, being the first lecture of the summer session. Gratifying reference is made to the Architectural Museum in "The Third Report of the Royal Commissioners of the Great Exhibition of 1851," although the Commissioners take a little more credit than belongs to them, when they say that very shortly *after* the publication of their Second Report, wherein they referred to the want of means of imparting instruction in Architecture, and to the absence of any museum or collection in the metropolis illustrative of that important division of the Fine Arts, "Vigorous measures were taken to provide a remedy for the deficiency in question, and that they have resulted in the establishment of an Architectural Museum, which has for some time been open for exhibition in Canon-row," the fact being that the Committee had occupied their premises some time before the Report in question appeared. The Commissioners go on to say: "The interest excited by this museum, and the success that has attended it, notwithstanding its recent formation, lead to the hope that it may expand to wider dimensions, and serve as the nucleus of a complete national collection of Architecture in all its branches. It already embraces a collection of many thousand specimens, and appears to be supported by the most eminent men in the profession. It is understood that the limited space afforded by the rooms in Canon-row tends to impede the development of the collection, and that a more extensive site would be of great advantage to it. Should it appear that the means at our disposal could in this respect be made of assistance to the promoters of this museum, we shall be happy to afford them such facilities as may be in our power."

walled with πλινθοι" (κεραμιαι, or potters' bricks, which I imagine to be unburnt bricks). "This wall," he says, "was 25 feet thick and 100 high, built on a stone plinth of 20 feet in height." The latest discoveries at Nineveh have shown us a similar wall on a stone plinth. In Mexico, the Teocalis, or God's Houses, are built, or at least faced with bricks, generally believed to be unburnt. One of these Teocalis, near Cholula, is in the form of a square truncated pyramid, and is formed of four terraces; its whole height is 177 feet; each side of its base is 1,423 feet, twice the length of the Great Pyramid of Cheops. Its base covers 44 acres, and its truncated top contains more than one acre.

In Egypt there are many small pyramids of unburnt bricks,—at Dashour and Thebes,—the bricks being formed of loam and chopped straw. Many of these bricks are stamped or moulded with figures and hieroglyphics; and it is very probable that it was for the building of these pyramids that the Israelites were employed in making bricks, as described in Exodus c. 5, v. 7.

Among the Greeks, we learn from Pausanias of Agis besieging the city of Mantinea, which was walled with unburnt bricks, and which he overcame by turning the river against it, which dissolved the wall. It is recorded that Nineveh, under Sardanapalus, was destroyed in a similar manner. Pausanias, too, tells us that walls of unburnt bricks resist the battering-ram better than stone walls; and Pliny says, that walls of this material are less affected by earthquakes than other walls; and we have found in our attacks on the Russian earthworks, that earthern walls are not less adapted for modern warfare.

The burning of bricks, and the use of mortar, seem to imply so great an advance in civilisation, that we should hardly expect to find burnt bricks used before some thousand years had elapsed from the Creation; and the first mention that we find of it is in Genesis, for the building of the Tower of Babel (Genesis xi. 3, 4):—"Let us make bricks, and burn them thoroughly; and they had brick for stone, and slime had they for mortar; and they said, Go to, let us build us a city and a tower whose top may reach unto heaven." The description given by Herodotus agrees with this exactly: "Here I think I ought to explain how the earth taken out of the moat was consumed, and in what manner the wall was built. As they dug the moat, they made bricks of the earth that was taken out, and when they had moulded a sufficient number, they baked them in kilns; then making use of hot asphalte for cement, and laying wattled reeds between the 30 bottom courses of bricks, they first built up the sides of the moat and afterwards the wall itself, in the same manner." We have lately found walls in Babylonia built exactly in this manner, with asphalte and wattled reeds.

Herodotus tells us that the king Asuchis, wishing to surpass the former kings, left a pyramid as a memorial, built of brick, on which was this inscription,—"Do not despise me in comparison with the pyramids of stone, for I excel them as much as Zeus the other gods, for by plunging a pole into a lake and collecting the mire that stuck to it, were made bricks, and in this manner built me."

Xenophon, in his "Anabasis," book ii, cap. 4, gives an account of the wall of the Medes. It was built, says he, of burnt bricks laid in asphalte, 20 feet thick, 100 feet high, and its length was said to be 20 parasangs, about 67 miles long.

Diodorus Siculus, book ii. cap. 8, mentions the walls of a palace at Babylon, as being of burnt brick, carved with men and animals all painted in the natural colours; but it is not very clear whether these were not all in raw tints as those at Nimroud. Herodotus gives a similar description of the walls of Ecbatana. The use of bricks painted in colours and burnt in was doubted until the discoveries of Layard and others, when specimens of burnt bricks were found at Nimroud, painted in white, yellow, green, and black enamel. These bricks seem to have been embedded in the plaster above the alabaster slabs, as ornament, and near Wurka, Messrs. Loftus and Boutcher found a wall formed of mud and chopped straw, ornamented with geometrical patterns formed by the circular ends of small cones of baked brick, the remaining portion of the cone being embedded in the wall. These ends had been enamelled in black, yellow, and white. Coffins and other large pieces of pottery have been found of brick or terra cotta, glazed with a greenish glaze, of which there are many specimens in the Museum.

Similar cones, with inscriptions and hieroglyphics, are found in Egypt and Babylonia, the inscriptions on many of the Babylonian urns being so fine as scarcely to be deciphered with the aid of a magnifying glass; and we are all well acquainted with the Egyptian terra cotta and steatite gods, covered with the blue glaze, as well as beads and scarabæi of different colours. There are specimens of enamelled wall decorations from India, but they are of late date—they seem to have been introduced by the Mahommedans about the thirteenth century.

The Greeks were acquainted with the burnt brick and enamel from an early date, which may have been introduced from Egypt. The vases of Sauros were celebrated in Homer's time, B.C. 900, and we have enamelled vases as early as 700 B.C.

Æschylus, in his "Prometheus Bound," tells us that before Prometheus's time, men were unable to build brick houses.

Aristophanes, in his "Birds," gives a very amusing description of the building of a city in mid air, in which he says no Egyptian bricklayers were employed, but the storks were making bricks, and the other birds laying them.

Demosthenes, in his orations about the crown, speaks of bricks; and Pliny mentions that the Greeks, when they might build of flint, prefer brick walls, for they were eternal if they were built upright; and he tells us that the walls of a certain city were of brick, and the Temple of Jove also, although it was surrounded with stone columns. Yet it has been stated that no Greek bricks have been found prior to the subjugation of Greece by the Romans, and with the exception of the terra cotta antifixæ, I do not know that the Greeks ever used terra cotta or enamelled pottery in the decoration of their buildings. At Rome the common houses were generally built of unburnt bricks, while the body of nearly all their public buildings was of burnt brick, faced with marble or stone. If they used brick as a means of decoration, very few specimens have come down to us; although we find that the temple of the Divus Rediculus, in the valley of Egina, is all of brick, beautifully executed, with the capitals of the Corinthian pilasters, and the ornaments and cantalivers in terra cotta, and remains of terra cotta ornament have been found at the Villa of Hadrian, at Tivoli, and elsewhere. Suetonius, in his "Augustus," tells us that Augustus boasted of having left Rome of marble which he found built of brick, a boast which was facetiously applied to Nash as the London Augustus in the following epigram:—

> "Augustus of old was for building renowned,
> For of marble he left what of brick he had found;
> But is not our Nash, too, a very great master,
> He found us all brick and he left us all plaster?"

Among other ancient nations, the Chinese have been celebrated for their great acquaintance with the plastic art. It is needless to mention the great wall of China, built of burnt brick (which much resembles the wall of Media). Its date is about 200 years B.C. The invention of porcelain is said to have taken place about A.D. 1000; or at least the first furnaces for its fabrication were erected about that time. They have used porcelain as a means of decoration. Their tower at Nanking is ornamented with porcelain tiles; and open-work tiles, about 2 feet square, with a greenish glaze, are used by them for dividing their chambers,—a specimen of which may be seen over a shop in Fenchurch-street. It will be useless to enter into any description of brick after the Roman empire, for in all probability the art of moulding and burning bricks was never lost. We find buildings of brick in all parts of Europe, dating from the first century of our era; but I have not examined them sufficiently closely to say whether they were built of the old Roman remains, or of new bricks. In the fifth century the palace of Theodoric, at Ravenna, was built of brick; and nearly the whole of the campanili of that city are circular, and of brick. At Rome all the campanili previous to the Renaissance period are built of brick; and in the towns of Italy we see the cornices formed of moulded brick, or of projecting herring-bone courses, or of series of corbellings. The brick-built towns of Italy soon began to apply art to the terra cotta or brick; and every variety of ornament moulding or sculpture was executed in that material. I should merely exhaust your patience were I to enumerate the buildings at Pisa, Bologna, Siena, Venice, Verona, and hundreds of other towns where ornamental brick buildings may be found.

Mr. Fowler has made many drawings illustrative of the moulded brickwork of Germany, the earlier portions of which are of the fourteenth century. The first modern brick house in England is said to be at Little Wenham, in Suffolk, date about 1260; and there is a house at Cressingham, in Norfolk, the whole of the *traceried* part of which is executed in white terra cotta.

There was, however, a portion of the fictile art almost lost in Europe during the middle ages, that of enamelling in colours on earthenware. Theophilus, who wrote in the twelfth century, in his schedule of the different arts, under the head of "Earthenware Vases painted in divers Colours of Glass," says,—"The Greeks, likewise, make earthenware basins, and small vessels, and other fictile vases, painting them in this manner: they take all kinds of colours, grinding them singly with water, and mixing with each colour a fifth-part glass of the same colour, very finely ground by itself with water, they paint with it circles, or arches, or squares, and in them beasts, birds, or leaves, or any other thing they may wish; after these vases have been painted in this manner, they place them in a window-furnace, and apply a fire of dry beech-wood below them until they are surrounded by the flame, and thus the wood being taken out, they close the furnace; the same vases can also be decorated in places with gold leaf, or with ground gold or silver, if they wish, in the above-mentioned manner."

This shows us that the Greeks of the lower empire were the only people he knew of then acquainted with the art of enamelling on earthenware, for if other nations had been acquainted with this art, this learned monk would not have failed to mention it. It appears, however, that the Arabs were acquainted with this art at least as early as the ninth century, and in their conquest of Spain they carried it with them; the enamelled ware which came from Majorca (where they had established a manufactory) was imported into Italy, and earthenware is even now called Majolica. The mosques of Cadiz, Cordova, the Alcazar of Seville, and the palace of the Alhambra at Granada, are enriched with enamelled tiles of great beauty, which show the advanced state of their keramic manufactures. At Kirkook, between Bagdad and Moussoul, is a minaret covered with glazed bricks, which Mr. Boutcher believes to have been erected as early as the twelfth century. In most Turkish and Persian towns there are still more beautiful examples; at Moussoul there are curious geometrical patterns formed in the parapets to terraces by means of hollow brick tubes, which hide the sleepers from the public gaze, while they allow a free current of the cool night air. Many of the Romanesque churches are ornamented with blue, red, and green basins let into the face of the brickwork. St. Agostino and San Francisco at Pesaro, San Martino at Pisa, San Francisco Bologna, St. Pietro in Ciel d'Oro at Paria, may be mentioned as examples, but these are not considered to be earlier than the fourteenth century. In 1388 was born Luca della Robbia, who, after having practised as a sculptor for some years, found he got so little by his profession, that he thought he would try some other plan for making his fortune; "for, considering," says Vasari, "that clay was easily worked and with little fatigue, and then only wanted the finding a means to preserve it, he went thinking about it so long, that he found a means of defending it from the weather, by giving it a glazed coating made with pewter, terraghetta, antimony, and other minerals and mixtures, baked in the fire of a fur-

nace." The first works he executed in this glazed terra cotta were the bas-reliefs over the sacristy doors at Sta. Maria del Fiore, at Florence. These were covered with a white glaze, but afterwards he was enabled to colour them with blue, green, and yellow; and all Italy is filled with these works, either done by him or his pupils. In the cathedral at Arezzo there are several coloured bas-reliefs, and the frieze of the hospital at Pistoja is entirely composed of coloured bas-reliefs in the Luca della Robbia ware. In one of the churches, I think at Siena, there is St. John the Baptist's head in a charger, executed in its natural colours, and its ghastly resemblance to reality makes it a thing never to be forgotten. The last of his race, Girolamo della Robbia, it is said, made the bas-reliefs, &c. of the Château, Madrid, for Francis I. After his time bas-reliefs, in coloured and glazed earthenware, were common throughout Italy. Madonnas are found in the walls at Assisi, and elsewhere; and I found the spire of a church built of common red brick, glazed with white, yellow, and green bricks, in the form of a truncated cone. At Amalfi, Capua, Naples, &c. most of the churches are covered with coloured tiles or bricks, as well as throughout France, Germany, and Belgium. And since the end of the sixteenth century, the art of manufacturing porcelain has become generally diffused through Europe; and I suppose that England may now boast that she can equal in fineness of material or colour, the pottery of any nation that now exists, or ever existed, while her designs have never equalled those even of the Chinese now so celebrated throughout the world, in the willow-pattern plate. Of cut brick I have said nothing; the folly of cutting a material in a hard state, when it can be moulded in a soft state, is too apparent to need comment.

It was but a few years ago that bricks and mortar were despised, and considered to be incapable of producing any architectural effect; and strange to say, the very despisers of this material are those who now cry out against sculpture, ornament, and colour, and tell us that architecture depends on proportion only. As an advocate of brick, I say, if you require proportion only, the use of bricks will not spoil the proportion of your building. The Castle of St. Angelo, at Rome, is surely imposing, though stripped of its coatings of marble and bronze; there is the Campanile of St. Mark's, and the interior of the Colosseum. Dante did not think the brick tower at Bologna was wanting in grandeur, when in one of his finest similes he compares Antæus Virgil and himself to this tower when a cloud passes across it.

And I think we shall find among the most imposing buildings of London the brick walls of the warehouses, the shot-towers, and the railway chimneys. But for architecture as a fine art we want something more than proportion,—we want ornament, and sculpture, and colour. A few mouldings from the curve of a shell, a leaf, or a stone, to give harmony and gradation to the lights and shadows, and we have the art of Greece, or of France and Italy in the thirteenth century. It is true that brick or terra cotta does not readily adapt itself to tracery or the pointed arch, and is totally unfit for circular columns of small dimensions, but we can substitute plate tracery, as at Pisa, and marble columns, and the pointed arch *may* be executed in brick, as at Siena, or better in terra cotta; or we may use round arches, with the smaller openings pointed in slabs of terra cotta, and for vaulting over any large span with a pointed arch there is no inconvenience in the use of brick. But the plastic nature of brick seems entirely to have escaped us; no one seems to have been struck with this fact but Luca della Robbia and the Chinese. We might take one of the commonest types of a London house, with two windows on each floor, with a circular head over each window, and fill it with a slab of bas-relief, or a pierced panel; the edges of the window-openings might be moulded; with openwork filling-in at the bottom of the window, bands of sculpture or foliage might be placed above the ground-floor; the rain-water pipes might be composed of stout earthenware, twisted, ribbed, or otherwise ornamented and gilt, with leaves or flowers at the junction, a slightly projecting band of ornament or colour for the cornice, and open parapets. If we complain of darkness in our streets, we may have the fronts of our houses entirely of white glazed tiles, or ornamented with bands and zigzags of colour; we may have them painted with frescoes like the Venetian palaces, but imperishable; we may cover our plastered fronts with mosaic, or with bulbs of fretwork like those at St. Mark's. And it is to the art workmen, and to all who may have the opportunity of employing them, that I would point out the advantages of brick. The cultivation of art is, in my opinion, the greatest benefit we can confer on any one; but it is a more especial benefit to those who are not gifted with that transcendant genius which will rise and make itself known and appreciated, in spite of every adverse circumstance. By cultivating art among those who are more particularly doomed to earn their daily bread by daily labour, we encourage a taste for the beautiful which brings with it its own reward; we encourage that individual exertion which raises and pleases at the same time, and enables the humblest to so far immortalise himself, that he may cause in after ages pleasure to thousands, while he is perpetuating the curl of a tendril or the expression of a face. We have at hand an inexhaustible supply of plastic material that merely asks us to mould it in any form of beauty that we love: it asks us to indulge in that instinct of our nature, never to repeat, but that every fresh piece shall have some difference from the piece that went before, or shall come after, in every foliated moulding, slab, panel, or spandril: it invites us to give with the same general form an endless variety: it gives to the sculptor a means of sketching out his burning thoughts, almost as rapidly as they come to him, and of fixing them so that they shall outlive marble and brass; it gives to the architect the means of decoration at a cost that cannot be attained by any other means,—the facility of plaster, the durability of granite. Every man may have his house decorated with the history of his life, his occupation, or his aspirations; our public buildings with their history and their viscissitudes; it gives to the flowers of our country an undying record on our buildings, to our heroes a reward for their toil and their sufferings; it affords to our people and our children a history that he who runs may read; and it may give to our city a series of historical sculpture which Nineveh or Athens never possessed; while we may paint and gild in imperishable colours the fronts of our houses, we may fill them with the finest fretwork, purer than alabaster and as enduring as adamant; we may set them over with jewels that shall glow like the liquid fire in the setting sun.

G. AITCHISON, Jun.

OPEN FIRE-PLACES AND THEIR CONSTRUCTION.

AT a meeting of the Royal Institute of British Architects, April 14th, a Paper on this subject was read by Mr. S. E. Rosser, in the course of which it was said;—That the position of the fire near the hearth is of the utmost consequence to the efficiency of any grate. This position lessens the direct radiation upon the faces of persons sitting near the fire, and throws more upon the legs and lower part of the body. The property of warmed air to ascend renders it necessary, for the general warming of a room, that the fire should be as low as possible, because heat, though readily carried upwards, cannot be communicated downwards. Hence the difficulty with the old-fashioned grates, mounted up 15 or 18 inches from the floor, of heating the air of the room below the seats of the chairs.

But an attempt has lately been made to revive the fashion of putting the fire half-way up the chimney, and it has been argued when it is considerably above the floor it will be in a better position to radiate downwards than when nearly on a level with it. This argument, however, is based upon an imperfect appreciation of facts. If the fire were a globular body, equally incandescent over its whole surface, the amount of heat radiated from its underside would be as great as that thrown upwards or forwards. No fire-place, however, that has yet been constructed is equally incandescent on all sides.

The Staffordshire fire-place, as it has been termed, is the nearest approach to the globular form, and it throws out more heat from its under surface than any other fire-place. The bottom of an ordinary grate is a mass of iron-work, which intercepts any amount of radiation; and this iron-work does not even become tolerably warm, because it is kept cool by the current of cold air rushing over it to feed the fire. Moreover, the space between the bottom bar and that immediately above it is commonly filled with dead ashes and dust, which materially impair the efficiency of this part of the fire, even to radiate heat in horizontal lines. The more we consider these facts, the more we shall be convinced that it is only the upper surface of the fire, and that portion of the front which is comprised between the two upper spaces of the bars, that are of any value in regard to radiating power.

Air-flues constructed in the chimney-breasts when a house is built would materially promote the comfort of the inhabitants. These flues might have openings at bottom communicating with the external air; and, if they were carried up alongside the smoke-flues from the different fire-places, or connected with the void spaces round the grates, a considerable portion of the waste heat, usually escaping by the chimney, would be communicated to the air in the flues. Apertures should be made into them at their upper part to communicate with the various rooms, and a continuous supply of tempered air might thus be provided to maintain salutary ventilation, to supply the requisite quantity of air to the fires, and to afford an increased degree of warmth.

Referring to Cardinal Polignac's statement as to the three modes in which the heat of burning fuel may be rendered serviceable for warming, viz. by radiation, by reflection, and by conduction; they may be combined to produce an effect very different from that of the stoves to which Dr. Arnott's remarks applied.

By the use of fire-brick linings, and by placing the aperture for the escape of the smoke at the back of the fire, we increase the intensity of the combustion, and the consequent radiation.

By the use of reflecting surfaces we ensure nearly all the radiated heat being directed into the room.

By placing the fire upon the hearth, and by properly arranging the conducting materials, we greatly increase the amount of radiation, and destroy the cold foot-bath which accompanies a fire raised much above the floor; while, by introducing warm-air chambers and caliducts, we abstract a large portion of heat from the smoke, and employ it to warm a supply of fresh air for the room, which prevents cold chink winds, one of the principal objections against the open fire-place, and corrects the tendency to unequal heating which arises when we depend on radiated heat alone.

By diminishing the quantity of air escaping up the chimney, we reduce its liability to smoking.

By the use of sunk ash-pits or concealed ash-pans, in conjunction with low fires, we prevent the dust being diffused into the room.

As regards bad ventilation, it is by no means evident that this asserted objection to the open fire-place is correct; but granting that the fire-place ought not to be the only means, modern practice has given us numerous contrivances by which efficient ventilation may be obtained; while, on the other hand, it is certain that so long as we allow the fire to draw its supply of air from the room, we must have some ventilation. As much disappointment is often occasioned by the want of knowledge as to the points which constitute a good stove, the following remarks are offered in the hope that they may be found useful.

1. The fire should be as near the floor as possible.
2. The opening of the front should be low.
3. The grate should be lined with fire-brick.
4. A shallow fire, with a large upper surface, is better than much front with a contracted upper surface.
5. A stove from which the smoke escapes

from the back is better than one from which it rises directly into the chimney.

6. A contrivance for regulating the quantity of air escaping up the chimney is very desirable.

7. The use of a blower in any form is only waste of fuel.

The following rules for setting stoves may be found of service.

1st. To let no air enter the flue, except what passes through the opening provided for the escape of the smoke. If it be desired to have a ventilating opening into the flue from the upper part of the room, the propriety of forming it will depend upon the draught which ordinarily exists in the flue. It will generally be better to use an unoccupied flue for the purpose of ventilation.

2nd. The grate should be kept as much forward into the room as is consistent with appearance. It is a mistake to suppose that it is more likely to smoke when brought well forward than when pushed back into a recess, provided cross draughts are avoided.

3rd. The flue in common register stoves should be brought down of equal dimensions perpendicularly over the fire, the register contracting the opening at the bottom, or, where the escape of smoke is at the back, the flue should be brought down at the back of the grate, and be made perfectly air-tight.

The gathering wings usually constructed over the openings of fire-places are perfectly useless.

In conclusion, it may be remarked, that with the improvements introduced into modern grates, the heat afforded for the warming of a room ought materially to exceed the proportion stated by Dr. Arnott, whose observations seem to have been made upon stoves of an imperfect construction.

A discussion ensued at the close of the paper from which the above is taken, and

Dr. Arnott, visitor, observed that the theory and principles of combustion were frequently quite opposite to the facts which occurred in the action of chimneys. He had no doubt that with some further study of the subject some of Mr. Rosser's opinions would become changed. With regard to low fires, it would be found by placing a thermometer on the floor, that a fire on the hearth did not dart a single ray of heat upon the carpet. The whole of the heat of a low fire would be found to ascend, and the feet of the people sitting in front of it became cold. Many of the opinions advanced on the subject of fire-places were no more true than the old opinions, that the sun rose and set instead of the earth turning round. M. Peclet, whom he had seen in Paris, had told him that the normal condition of all the chimneys in Paris was to smoke. The dearness of fuel caused the people there to keep their fires half smothered, and to shut the inside of the chimneys, and let the smoke into the room. The smoke, indeed, was made so cold by the channels round the fire, that the necessary intensity of ignition was prevented; so that less heat was obtained from the fire, and the smoke was so cold that the external atmosphere was not sufficient to make the chimney act. The tops of all the chimneys in Paris exhibited in a striking manner the distress of the inhabitants, by the great variety of cowls which ornamented them. He described the effect produced by substituting, in his own drawing-room, a low fire-place (the very best which a good ironmonger could supply), for one that was raised above the floor. He found with the low fire the cold affected his feet most severely. He considered a grate should be raised about 14 inches from the floor.

Mr. C. H. Smith observed that the horizontal shelf behind the Staffordshire grate he considered a very good contrivance. Most of the inns, and many private houses, in Yorkshire, had a similar arrangement, the shelf holding a sufficient quantity of coals to last all day. Reasoning upon this arrangement, he had been induced in his own house to adopt the plan of warming the coals beneath the grate before placing them upon the fire, and he found the combustion more perfect, and the smoke much less in consequence. His fire-place was upon a plan of his own,—the front of the bars being in a line with the front of the chimneypiece, and therefore in advance of the walls of the room. This grate drew exceedingly well, but was liable to disturbance from cross draughts.

Mr. Baker mentioned a case in which he had adopted one of the Farnley Company's fire-brick fire-places in the shape of a niche. The hearth, which was of fire-brick, was raised 3 inches above the floor: cold air was admitted underneath. The fire-place was made upon Leslie's principle, without any false front. The fire-brick consumed the smoke that was generated; but he found it was necessary to keep the hood thrown back, in order that the smoke might pass up the chimney. This stove, which was 22 inches wide, warmed perfectly a room of 40 feet by 24. The fire-brick itself was not, however, a satisfactory specimen.

DRAUGHTS IN CHURCHES.

OPEN ROOFS.

THE false roof referred to by your correspondent would be the most effectual remedy against such portion of the draughts as owe their origin to the leaky state of the lofty open roof.* Felt, however, applied between the boards and the slates, forms a very efficient protection. The kind of felt used should be the "No. 2 dry hair boiler-felt," the sheets laid close together at the edges; or better still, two thicknesses of 12-oz. felt, the sheets breaking joint. Churches with lofty open roofs are particularly liable to be draughty, and if they are not counterceiled between the rafters, the use of felt on the outside of the boarding is indispensable, more particularly if the church is intended to be artificially warmed. Hardly any amount of heating surfaces can render a church with a leaky roof tolerably warm. Your correspondent is correct in his surmise, that roof-draughts are not wholly caused by the cold air coming through the slates into the church. Lofty open roofs, even if all communication through them between the external and internal atmosphere be prevented, will still create draughts, from the cooling effect which their internal surfaces exert upon the body of air in contact with them. In cold weather the extent of roof exposed to the action of the wind parts with so much heat (although the boards are not very good conductors) as to cool the air in contact with the underside of the boards with great rapidity, and to create descending currents of cooled air, the velocity of which increases in proportion as the building is more lofty. A good lining of felt between the boards and slates will go far to prevent the transmission of heat from the interior. In a church now building under the superintendence of an eminent architect, the lining of felt is interposed between two thicknesses of boards, and the slates are laid upon battens placed longitudinally upon the outer stratum of boards. This is perhaps the best kind of roof that has been adopted, as the battens, when laid longitudinally, prevent the passage of currents of air in an upward direction under the slating.

When, however, all has been done that can be done to render the roof perfect, your correspondent will find that if the church be artificially warmed in any of the ordinary modes, the draughts will still prevail.

It has been common to refer these draughts to imperfections in the glazing, because they are more particularly experienced near the windows. The cause, however, lies in the transmission of heat by the glass to the external air. This cools the particles of air which are in contact with the inside of the glass, and with such rapidity, that it has been found that one foot superficial of glass will cool one cubic foot of air per minute, as many degrees as the internal temperature exceeds that of the outer air. The air so cooled by the action of the glass is contracted in bulk, and thus becoming heavier, descends in a current against the window until it reaches the sill, where, its farther progress in a perpendicular direction being arrested, it is deflected across the church just about the level of the heads of the congregation. In new churches this evil may be prevented by providing channels in the breast of the window, by which air warmed in the basement may be carried up and discharged at the level of the sill. The air introduced at this point being warmer, and consequently lighter than the general air of the church, has a buoyancy which carries it upwards for some distance, until it meets the cool current descending from the upper part of the window, with which it unites and dissipates it. Or the process may be reversed, and the cooled air may be allowed to continue its descent by the flues formed in the window breast as described, and thence conveyed by channels beneath the floor, to feed the warming apparatus in other parts of the church.

Where some such arrangements as these cannot be contrived, there is no remedy against window-draughts but by placing coils of hot water pipe at the windows, or carrying a continuous pipe all round the church at the level of the window sills. These facts explain a very common remark that churches warmed by artificial means are always more subject to draughts than buildings in which no warming is attempted, the draughts generally increasing in intensity with the elevation of the internal above the external temperature. S. EGAN ROSSER.

* Three correspondents have addressed communications to us with special reference to the particular church supposed to be alluded to by "An Invalid." We prefer, however, to keep to the general question.

ST. JOHN'S-GATE, CLERKENWELL.

WE understand that upon removing some modern dwarf wainscoting in St. John's-gate, an interesting discovery has just been made of one of the original stone Tudor chimney-pieces, and a singular communication from the groined archway to the hall, or large room above. The chimney-piece is neatly moulded, and has spandrils containing cruciform gilt ornaments: the opening of the fire-place is 4 feet 6 inches by 4 feet 2 inches, and the stone is the same as that of which the gate is constructed. Over the chimney-piece is a relieving arch. The secret-chamber occurs in the inner side-wall: the latter is 3 feet 4 inches thick, and the chamber is 1 foot 11 inches wide, and 2 feet 9 inches in length. At the base of the chamber, or shaft, is an arched opening (now filled up), communicating with the open archway beneath the gate, and the top of the shaft is immediately under the floor of the hall. The chimney-piece is to be restored, and the chamber preserved intact.

We may mention that Mr. W. P. Griffith is preparing for publication, plans, elevations, and sections of St. John's-gate (as it originally existed in 1504); also of the crypt under St. John's church, with the boundary walls of the priory, and particulars connected therewith; so as to preserve an accurate record, and, if possible, rescue this once large establishment from the destroying hand of modern improvements and time.

COLESBORNE-HOUSE, GLOUCESTERSHIRE.

COLESBORNE HOUSE, situated in the valley of the Cole, seven miles from Cheltenham, in the county of Gloucester, the residence of J. H. Elwes, Esq. has been completed from the designs of Mr. D. Brandon.

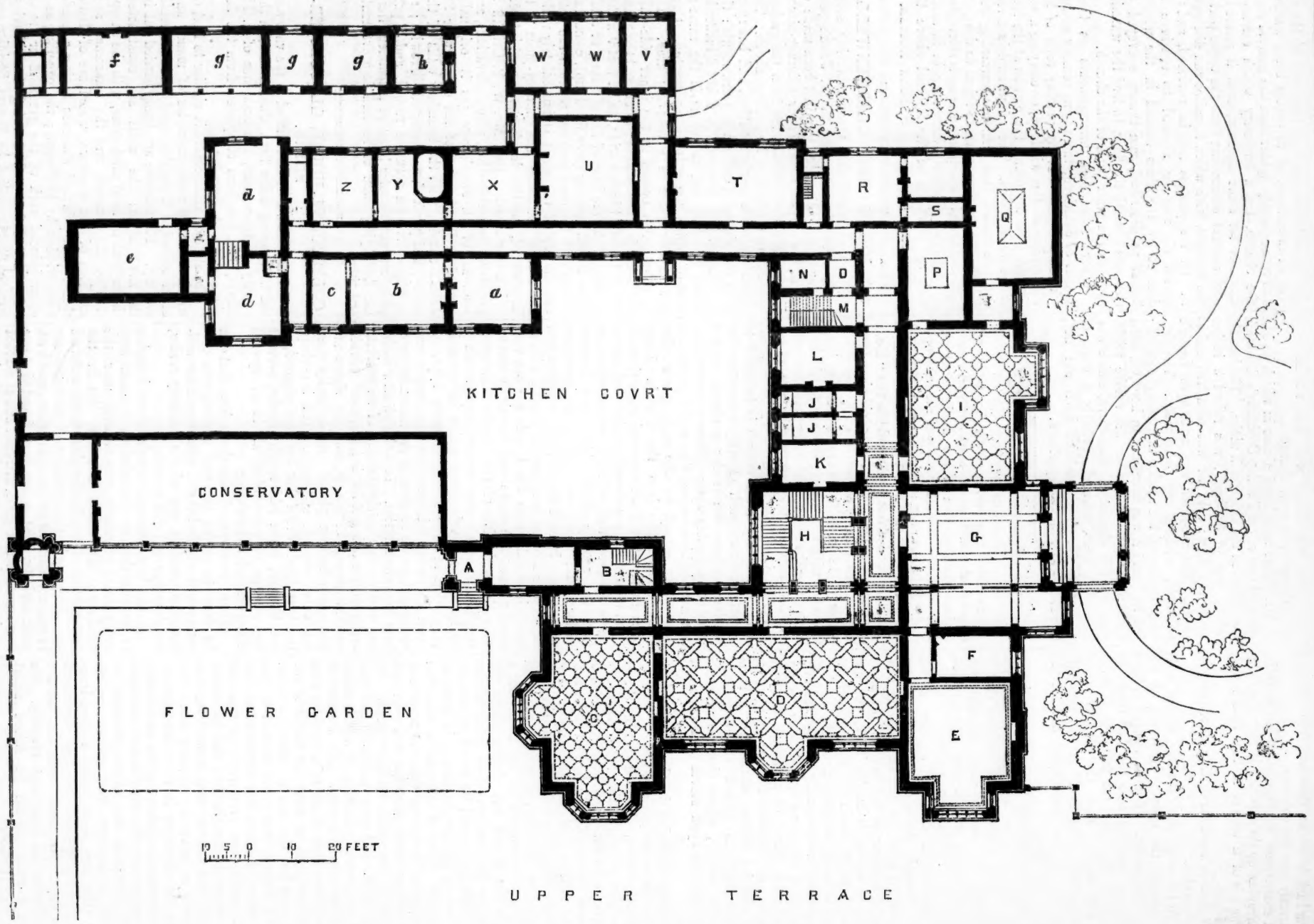
The style of architecture is similar to that of which there are many examples of manor and other houses of the beginning of the seventeenth century. The terraces are being carried out in the same style: the walls are constructed throughout of local sand-stone, with the exception of the cornices, and the transomes and mullions of the windows, which are of Bath stone. The principal staircase having a handsome window by Willement; the panelling and other joiners' work of the ground-floor are of oak; the dining and drawing-rooms having parquet floors supplied by Messrs. Steinitz and Co. The corridors communicating with two stone staircases, are of fireproof construction, upon Mr. Barrett's principle.

The arrangement of the rooms and offices on the ground-floor is shown in the accompanying plan of the building. The upper floors are appropriated for a boudoir, bed-rooms, dressing-rooms, and nurseries.

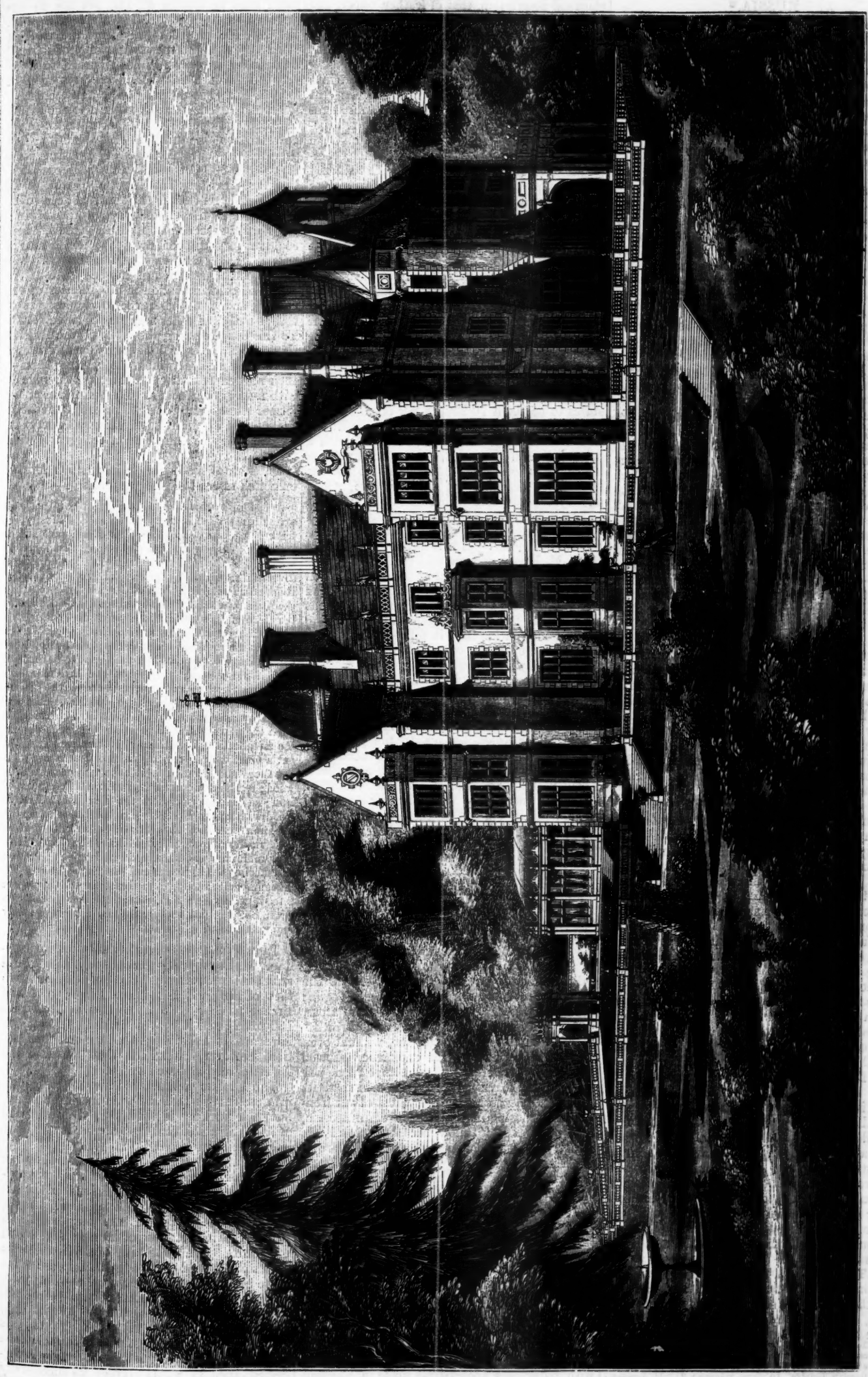
The height of the floors is as follows:—ground-floor 16 feet, first-floor 12 feet, second-floor 10 feet. The wine, beer, coal-cellars, &c. are in the basement.

Messrs. Piper and Son were the contractors for the work; the local stone, lime, and bricks, being supplied for their use.

A. Garden-entrance.
B. Private-staircase.
C. Drawing-room.
D. Library.
E. Morning-room.
F. Waiting-room.
G. Entrance-hall.
H. Principal staircase.
I. Dining-room.
JJ. W.C.
K. Cloak-room, &c.
L. Business-room.
M. Back-staircase.
N. Housemaids' closet.
O. Lift.
P. Serving-room.
Q. Billiard-room.
R. Butler's room.
S. Strong-room.
T. Servants' hall.
U. Kitchen.
V. Kitchen-maids' room.
W. Larders.
X. Scullery.
Y. Bakehouse.
Z. Coals, &c.
a. Store-room.
b. Housekeepers' room.
c. Still-room.
dd. Washhouse and laundry.
e. Brewhouse.
f. Cooper's shed.
ggg. Wood, coal, & coke stores.
h. Game larder.



PLAN OF COLESBORNE HOUSE, GLOUCESTERSHIRE.



COLESBORNE HOUSE, NEAR CHELTENHAM.—MR. D. BRANDON, ARCHITECT.

THE PRODUCTIVE FORCES OF RUSSIA.*

RUSSIA has been taught a lesson she cannot and will not forget in a hurry, whatever be the intrinsic value of the treaty of peace to which she has just been compelled to assent; and, doubtless, much more dependence may justly be placed in the result of that lesson than in the words or the concessions of any treaty. The grand effort of the present generation of Russians to carry out a notorious purpose *has been made and has failed*. No single generation of men is ever likely to repeat such an effort, whatever their posterity, not instructed by the struggle, may hereafter do; and in the failure of the past effort, and not in the treaty of peace, rests Turkey's future safety, so far as regards Russia, for many a day. It must be a future Constantine, and not the present, whose baptismal name shall truly proclaim him the destined king of Constantinople and its dependencies.

The part that we have taken in teaching the Russ this effective lesson will hereafter appear more brilliant and overwhelming than it now does. It will then be more clearly seen than it yet seems to be that our naval power did much more than the military power of the French towards the end in view. Had the French military power been so irresistible that the Russians had not dared to face it, and had retreated within the shelter of their desert steppes, would not this have been a virtual defeat of the Russians that ought to have redounded far more to the military renown of France than the taking of the Malakoff? And did not the late Czar frankly and publicly declare to "all the Russias" that the great and peculiar war-power of Britain—her naval power—was "invincible?" And was it not on account of this very invincibility that Russia fled the ocean altogether, and that Britain was thus afforded no opportunity of earning the brilliant but minor renown of vanquishing the foe in her own peculiar field of war? It yet remains to be seen, moreover, whether the rapid and immense augmentation of the naval forces of Britain preparatory to a new campaign against even the stone walls, the shallows, and other shelter of her fleets and coasts, did not contribute more than anything else (combined with the injury done, by the British mainly, to her commerce) towards the final defeat of Russian obstinacy, pride, and aggressive ambition. It is not our part here, however, to enlarge on such subjects. We have a more peaceful purpose in view than even the fighting of battles over again. Besides, the allies and their powerful foe have shaken hands, and to a certain extent are friends again: henceforth, let all strive together in the arts of peace, and let us even lend a willing hand to assist our former antagonist in carrying out that grand system of peaceful aggrandizement within her own territories, on which she now appears to be resolved; taking care, however, not to *forget* her past behaviour.

The return of peace, and the devotion of Russia and its ruler to the development of internal resources, would seem to have been anticipated by the sagacious publishers of the English version of the important and instructive work here under notice, so well timed is its issue; and the author himself must feel that his work is just the desideratum of the present critical epoch in Russia's history. We have very little doubt that by this time the book in question has been earnestly and interestedly perused and studied by the new Czar himself, who appears to be actuated by a more peaceful, civilized, and enlightened spirit than his fire-eating father, to whose moloch-like spirit of destruction so many thousands—we had almost said millions†—of his fellow-creatures have been sacrificed.

M. Tegoborski, in this second volume of his "Commentaries," treats of the manufactures and the commerce of Russia. The volume opens, in a continuation of the second chapter of the work, with an account of the woollen, silk, and cotton manufactures: those of a chemical description, that of leather, paper, and various others follow; then metallic manufactures, pottery, cabinet-work, &c. The third chapter is devoted to commerce, and the fourth to maritime navigation.

We shall take a slight dip here and there into some of these various subjects, especially as regards the manufacturing industry and resources of the Russian empire; premising that M. Tegoborski appears to be actuated by rather a liberal spirit, as regards questions of free-trade, competition, &c. and does not display much tendency to undue partiality or prejudice in his views; on the contrary, treating of his various subjects in apparently a fair and equitable spirit.

A distinguished technologist used to say that one might judge of the amount of industry in a country from the quantity of sulphuric acid that it consumed. The author, aware of this, gives some statistics on the subject, under the head of chemical products, to which we may briefly advert in the outset. The dearness of sulphuric acid long exerted an adverse influence on the extension of manufactures in Russia, and even yet the price is comparatively very high, being 1 rouble 20 kopecs per pood, which the author contrasts with the price in France, which he states to be about 70 kopecs per pood. About twenty years since, however, the price in Russia was 5 to 5½ roubles per pood; and if such a price had still prevailed, it would doubtless have been a complete extinguisher to various important branches of manufacture which already begin to spread throughout the country.

Leather, one would have thought, must be a very flourishing and advanced branch of manufacture in Russia; yet it is not so: on the contrary, M. Tegoborski remarks that, "strange to say, our leather manufacture has remained in the rear of every other; and, whilst the cotton manufacture adopts every new improvement as it arises, the former still keeps drawling along in the same routine that it followed 100 years ago and more." He complains of the want of that capital which is requisite from the tediousness of the processes: were the latter improved and expedited, doubtless the want of the former would be of less importance. The bright side of this manufacture is the fabrication of "youfts," or Russia leather, to the prosperity and continuance of which the abundance of birch and its peculiar tar essentially contribute. About 250,000 poods of this leather, valued at 3,400,000 roubles, are (annually, we presume) manufactured, chiefly in the governments of Nijni, Nowgorod, Wladimir, Twer, Perm, Jaroslaw, Pskow, and Orel. Three sorts, red, white, and black, are manufactured, the red being the most important, on account of the abundance of birch tar used in *its* preparation.

Iron is the lever of every other species of industry, and the extent of its consumption affords a pretty fair index to a country's wealth, and the development of its productive forces. M. Tegoborski remarks on this subject, that "the prohibitory system, with a view to the protection of native iron, was long in vogue; but by degrees the conviction everywhere arose, that it was inexpedient to sacrifice all other interests to this one,—often, too, without even benefiting the latter; for experience showed that when the stimulus of competition was removed, the manufacture lagged behind in its methods." Again he says,—"Most of our iron-masters, reposing on the cushion of protection, long neglected to follow the progress of this industry in foreign countries; and any improvements introduced have been very recent and very exceptional." The increase of production, therefore, has been very trifling, and the reduction of prices very small. The perennial average production of pig iron in 1831-33, was 10,515,170 poods, and in 1849-51, it was only 12,638,540 poods. Of bar iron, the triennial average production in 1837-39, was 6,930,000 poods, and in 1849-51, it was 9,141,845 poods. The triennial average price of common bar iron at St. Petersburg has been nearly the same ever since 1824, namely, about 1 rouble 25 kopecs per pood. The author contrasts this unprogressive stability or stagnation of price, with reductions successively made in England, but he has mistaken mere gambling fluctuations for steady and permanent reductions of price attained by means of improvements in manufacture: thus he quotes 5*l.* 15s. per ton as the price of bar iron in England, reduced from 9*l.* and 10*l.* 10s. in 1836-40, "from the adoption of improvements in the process of production," whereas bar iron with us has returned to these very prices of 1836-40, and may, six or eight months hence, be down again to half the sum.

Formerly, Russia exported iron to the extent of 2,300,000 poods: this exportation gradually decreased to one-third of that quantity; but previous to our blockade of Russian ports 700,000 to 800,000 poods were still exported. The fact that any such export of iron at all from Russia still takes place is doubtless to be attributed to the decided superiority of iron made with charcoal, as it is in Russia, where coal is a very rare commodity, of which men of science in fact are only still in search. The author complains much of the bad state of the means of communication in the interior of the country as a great hindrance to the progress of this as well as of other branches of manufacture. To this evil, however, the eyes of the Russian Government are now sufficiently open, whatever be the real motives which are inciting them to their alleged resolution to interlace the interior with railways and roads. The formation of the former must tend greatly to promote the home production of iron in Russia, whatever aid England may be called upon to give towards the end in view.

The state of the iron trade in Russia is forcibly exhibited in the following quotation:—

"The high price of iron is a great evil, both for agriculture and for most branches of industry,—a truth so generally recognised that it seems trivial to repeat it. Experience has also shown that there are few articles of which the consumption is so elastic or so much regulated by price. Where cheap, as in England and the free ports of Germany, it often takes the place of wood and stone; where dear, wood usurps the place of it, even for those purposes for which the use of iron seems the most natural of any. We find in the rural buildings of our western provinces wooden nails taking the place of iron nails; and even amongst easy, if not wealthy proprietors, we find locks and bolts at park gates and garden doors, and sometimes at barn doors too, replaced by wooden latches, and hinges by osier rings, by which the doors are hung upon the posts, whilst their richer brethren, who use the metal article, grumble sadly at its price. Throughout a great part of the empire, farm-horses are without shoes and farm-carts without tire; axles are of wood; spades of wood covered with a thin coating of iron; and in many districts the ploughshare itself is wood with an iron point. Implements of that description were to be seen at the St. Petersburg show of agricultural products in 1850. The partisans of the prohibitory system allege that in many provinces the shoeing of the horses and the use of iron in the peasants' carts would, from the quality of the soil, be totally useless,—in fact, rather hurtful than otherwise; but we think such assertions as these scarcely require a serious refutation."

In regard to absolute quantity of iron produce, M. Tegoborski places Russia in the third rank; its production, he calculates, being to that of England as 100 to 1,018; to that of France as 100 to 219; to that of Austria as 100 to 82; and to that of Prussia as 100 to 50: in regard to relative production and consumption, however, he admits that Russia ranks lowest of any of these nations.

The Uralian mines are believed to contain iron ore enough to last for an indefinite period, but their working is limited by their command of fuel. Strata of coal, however, it is said, have lately been discovered in the Ural.*

The author advises the admission of foreign iron in competition with that of home manufacture, under certain modifications of import duty, particularly as regards pig-iron. Russia, he remarks, is at present the only country in which the importation of iron by sea is still prohibited. The admission of foreign iron, he points out, would give a great impulse to the home construction of machinery, now imported, at great cost, to the value of nearly three millions of roubles. In regard to English iron, however, the invasion of which, he adds, is chiefly formidable to Russian iron-masters from its low price, the imposition of a duty is suggested, such as would prevent its successfully

* "Commentaries on the Productive Forces of Russia." By M. L. De Tegoborski, Privy Councillor and Member of the Council of the Russian Empire. In three volumes: Vol. II. London: Longman, Brown, Green, and Longmans, 1856.

† In the one war just closed, it now appears that 500,000, or half a million, of the Czar's own subjects alone were thus sacrificed!

* Efforts, we may here remark, are being now also made to discover coal wherewith to supply the steam fleet of Russia.

competing with their own in the markets of the interior, leaving for its market the country within a certain radius of the coast.

In 1852 there were in Russia eighty-five iron works belonging to individuals, of which thirty-nine were in the government of Perm, seven in that of Orenburg, seven in that of Wiatka, and twelve in that of Kalouga: the other twenty were distributed over the governments of Wologda, Wladimir, Nijni-Nowgorod, Orel, Penza, Riazan, Tambow, Toula, and Kostroma. The Crown works are comprised in the six mining districts situated in the governments of Tomsk, Irkoutsk, Perm, Orenburg, and Olonetz, producing about two million poods of pig-iron, or 15 per cent. of the total production of the empire, without reckoning Finland and the kingdom of Poland. The eighty-five works belonging to individuals are in the hands of fifty proprietors or companies.

The manufacture of tools for the different trades is not in a very forward state. Its chief seat is at Toula. At Zlatoust, however, superior articles are made. Files à l'Anglaise have been manufactured, but the nicer sorts are still imported from England or France. The manufacture of locks and padlocks still leaves room for improvement: it is chiefly carried on at Pawloff, Toula, Jaroslaw, Moscow, and St. Petersburg. Padlocks, costing 2 to 35 kopecs each, are exported to Asia. The manufacture of cast-iron articles and machinery is far in the rear of its relative importance. Till of late there was only one large establishment of the kind (at St. Petersburg) except the crown works for the navy and army.*

PROVINCIAL NEWS.

Oxford.—The committee appointed by the Street Commissioners to carry out Mr. Faulkner's motion for the erection of two fountains, to commemorate the acquisition of peace, on discussing the subject, were unanimous in favour of erecting a fountain in St. Giles's, on the site where it had been agreed to erect a flushing apparatus and tank for flushing the sewer leading from St. Giles's to Magdalen-bridge; and it was unanimously resolved "That it is desirable that the flushing apparatus should be above ground; that the chief objection to such a structure above ground would be the unsightliness of it; and if this objection can be removed by making, through private subscription, a fountain, such a combination is highly desirable." It was, therefore, resolved that 200*l.* having been stated by the surveyor to the Board as the sum necessary for a mere flushing apparatus, the committee recommends that this sum be appropriated for such necessary work. They also recommend that this sum should be expended in co-operation with any general committee which may be appointed to conduct the erection of a fountain.

Andover.—On Tuesday in last week a large new stable fell, which had only been completed a very few days, in the yard of the Eagle Tavern.

Dudley.—The tender of Messrs. J. and G Lilly, of Measham, for the erection of the new workhouse and industrial schools (11,441*l.* and 2,553*l.* odds) has been accepted.

Bristol.—The *Bristol Times* revives a project for a new street, in two divisions, one from College-green to the top of Brandon-hill, and the second from the top of Brandon-hill to Clifton-hill. A road thrown over a series of arches from College-green to Brandon-hill, and likewise on arches from Brandon-hill to Clifton-hill, would, it is remarked, make the grandest street in the kingdom, "conducting people from the collegiate precincts of the old city, to that most noble of prospects, now to be enjoyed from Clifton Church."

Swansea.—On the 12th of May last, being Whit-Monday, the foundation stone of St. Peter's chapel of ease to the mother church of St. Mary, was laid by Mr. H. Hussey Vivian, M.P. of Singleton, Swansea. After the ceremony, the company was addressed by Mr. Vivian and the Rev. E. B. Squire, Vicar of St. Mary's parish. The edifice, which is to be of a plain, but substantial character, is a parallelogram in form, the internal dimensions being 77 feet by 25 feet. The chancel is formed by a continuation of the nave, and is principally distinguished by the treatment of the ceiling. There will be a porch on the south side, and on the north a vestry, with a heating chamber beneath. A bell gable will be on the west end. The roof is constructed with arched principals, and is open to the ridge, the ceiling being formed between the rafters, except over the chancel, which is to be boarded in an arched form. The style of architecture adopted is Transitional of the thirteenth century, immediately following that known as the "Early English." There is accommodation for 307 persons, including a gallery at the west end intended almost entirely for children. The whole of the sittings are free and unappropriated for ever. The subscriptions and grants received from the Church Building Commissioners amount to 750*l.* leaving a deficiency of 750*l.* the whole cost for the completion of the church being 1,500*l.* The architect employed is Mr. R. Kyrke Penson, and the builder is Mr. Joseph Richards, of Swansea.

Manchester.—A warehouse which is approaching completion in Portland-street, will be the largest building, it is stated, amongst the many already large ones, in Manchester devoted to mercantile purposes. It is being erected for Messrs. I. and S. Watts, merchants and manufacturers, Fountain-street, by by Messrs. Travis and Mangnall, architects. The dimensions of the building are 300 feet by 90 feet. It is seven stories high, and above 100 feet in extreme elevation. The architecture is Venetian, the windows of each story being of different construction, yet the whole façade, according to the local *Courier*, harmonising into one general effect. There are two principal entrances in Portland-street, one of which is opposite York-street: they are surrounded by pillars, with stone ornaments, and lead to vestibules, through three glass doors, from whence rise the principal staircases, which are three yards wide. The interior of the warehouse is lighted by five areas, and the roof is nearly all glass. At the back in Silver-street will be the offices, and a loading area, capable of accommodating two lurries at a time: there will also be a fire-proof staircase. As the chief precaution against fire there will be a large cistern at the top of the building for holding rain water. Hose will be placed on every floor, and other means taken to keep fire in check until the arrival of firemen. There will be two hoists in the building, one for raising goods and distributing them, the other for carrying them down when sold. Lavatories and other arrangements will be found on each floor, and more generally on the basement. The building was commenced early in 1855, and is expected to be finished in about eight months. The distinctive architectural features of the erection consist of four tower-like elevations fronting Portland-street, and which extend across the building, forming the seventh story, the windows in which will have the mercantile advantage of northern light. The visible parts of the warehouse will be of Yorkshire and Derbyshire stone; and the windows will be filled with plate glass. The area on which the building stands is about 3,000 superficial yards. There will be virtually three warehouses in one, Messrs. Watts occupying the principal portion.

Alnmouth.—The works connected with the erection of a new bridge across the Aln here are about to be commenced. At a recent meeting of the general committee of this undertaking, held on the 13th inst. the subscription lists were examined, from which it appears that sufficient funds have been collected for the erection of a narrow bridge; but that it would require 150*l.* in addition to the sums received, to build one of the width desirable for the accommodation of the public. It was resolved that the works be proceeded with according to the plans and specifications of Mr. F. Charlton, the engineer, upon the principle of a broad bridge; and that, as the contractors had engaged to erect a foot-path across for passengers, by 1st June next, this footway be completed and opened to the public on that day, and a toll of one penny taken from every person passing, in order to assist in making up the deficiency of funds required for erection.

* To be continued.

THE PRINTERS' ALMSHOUSES, AT WOOD-GREEN.

THE new Asylum, at Wood-green, Middlesex, is to be inaugurated on the 11th of June, by a public breakfast, to take place on the grounds of the Institution, at mid-day. Earl Stanhope, who laid the foundation stone, is to preside on the occasion. There is an excellent list of stewards, even already, we are glad to see, including Messrs. Clowes, Mr. John A. D. Cox, Mr. Figgins, Mr. Henry Hansard, Mr. T. R. Harrison, Mr. H. Ingram (M.P. for Boston), Mr. John Murray, Mr. W. Rivington, Mr. T. Spalding, Mr. W. Spottiswoode, Mr. Charles Whittingham, Mr. T. Longman, Mr. Charles Wyman, and many more. Mr. Douglas Jerrold, Mr. Mark Lemon, and other well-known literary men, we learn, have promised to attend. There is to be an evening party, too, on the same day, when Mr. William Clowes will take the chair.

We some time since gave an engraved view of the new Almshouses, it may be remembered. They occupy a fine healthy suburban site, and will afford comfortable accommodation to the pensioners of the Institution.

It is the bounden duty of all who are concerned in the advancement of literature to interest themselves in the success of this Institution; and in the general term literature, we intend especially to include that modern power in the state,—the newspaper press,—and who is there that does not feel interested at least in that species of literature, to the wonderful diffusion and freshness of which the labours of the compositor and the printer night and day contribute, till they are but too often untimely and prematurely exhausted in the service of the public, and no longer fit for anything but for the asylum now prepared for them. We trust, then, that the public at large of this metropolis will extensively assist at the inauguration of the Printers' Almshouses, and contribute handsomely to the funds of the Institution; and that having once found their way to Wood-green, they will periodically remember its benevolent purposes, and assist in enabling the printers of London to extend its accommodations and its usefulness as an asylum for life to the poorer and more unfortunate brethren of the craft.

The object of the Institution being known, and its excellence admitted, our readers will not be surprised to hear that H.R.H. Prince Albert and the Duke of Cambridge have enrolled themselves amongst its patrons.

ARCHITECTURAL PUBLICATION SOCIETY.

THE annual meeting of this society was held at the rooms of the Royal Institute of British Architects, May 15th, Mr. James Bell, M.P. in the chair. The report of the committee was read: from it we learn that,—

"In the 'Dictionary of Architecture,' the letter B has been completed in the parts II. and III. and the quantity of letter-press thus issued for the year 1853-54, may be estimated at about equal to 680 pages of an octavo volume: it is illustrated by 115 woodcuts. A calculation has been made that these two parts of the text contain a quantity of type nearly equal to that in five volumes of the usual octavo novel. The year's production, as far as quantity alone is concerned, must therefore be considered as satisfactory; while from the great care and attention devoted to the work in all its stages, it is expected that very few, if any, cases of incorrectness have been found: should any be discovered, it is requested that they may be communicated to the secretary.

In the last report it was stated, in regard to the account for 1854-55, that in consequence of the shortness of the period during which it would be kept open, the income would be undoubtedly less than that of previous years, unless greater punctuality was evinced by the members themselves in paying their subscriptions. This has proved to be correct, the receipts showing an income of only 331*l.* 4s. 7d. whilst the expenditure has been 332*l.* 0s. 9d. leaving a debt of 16s. 2d. This income, however, has enabled the committee to issue twenty-four plates to illustrate the articles contained in the letters A and B of the 'Dictionary.' These parts have been considered by many members to be superior to any previously issued, and to constitute a sufficient return for the year's subscription. However, had the payments been larger, or even earlier, no hesitation would have been felt by the committee at ordering a third part."

"During the past season, the committee has been engaged in the consideration of various propositions for alterations in the conduct of the 'Dictionary:' these propositions, however, were found on discussion to involve too great an alteration in the present appearance as well as plan of the undertaking.

For the year 1855-56 just concluded, the letter C is in course of progress. The three first letters in all dictionaries contain the largest proportion of articles,

and the present one is not exempt from the rule. According to the published 'List of Terms,' A, B, and C comprise one-third of those in the whole alphabet. It is clear that the labour is well advanced, and it behoves the supporters of the society to assist in obtaining that accession of members which is requisite to complete the work for the amount estimated. The committee, as trustees of the funds of the society, can only expend the ascertained income: a larger quantity of matter, therefore, is only to be obtained by the desired increase in the funds."

"Although the desirability of adding to the number of supporters has been so frequently alluded to, the committee feel themselves called upon again to press this point upon the attention of the meeting. The present supporters consist chiefly of members of the profession: the *personal application* is only required of every member to his friends, whether amateurs, engineers, or builders, for each to secure at least two or three additional subscribers. The committee have great pleasure in quoting, as a proof of the utility of such applications, their resolution passed at a meeting held April 24th, namely, 'That the best thanks of the committee be given to Mr. Lockyer for his valuable exertions in increasing the list of subscribers.'"

The amount received for the year ending April, 1856, is 304*l.* 10s.

The report having been adopted, special votes of thanks were passed to the committee, treasurer, honorary secretary, and local honorary secretaries; also to Messrs. Benjamin Ferrey and T. Hayter Lewis, for their kind services as auditors; also to the Council of the Institute, for their kindness in allowing the use of the rooms.

Messrs. J. H. Good, jun. and Octavius Hansard were appointed auditors of the accounts for the year ending 30th April, 1856; and the cordial thanks of the meeting having been given to Mr. James Bell, for his conduct in the chair, the meeting adjourned.

APPROACHES TO HYDE-PARK FROM BROMPTON.

AUTHORITIES in office have of late deserved well of the public, by conceding to general conveniences free routes. Those through St. James's-park (when open), will mark an era in liberality, which may be termed the *Hall* mark. A new pathway has also been opened, across the north-west bridge into Regent's-park, besides numerous improvements in laying out grounds and cutting walks. There are, however, other openings and easements yet required, and the attainment of these depends on the inhabitants of the districts immediately concerned.

Brompton is one of the excluded quarters: from Albert-gate to the new roads (Messrs. Jackson and Freke's), beyond the new National Gallery, fully three-quarters of a mile, there is no traverse road. Along the park margin, from the towering Oil Cloth Factory to Mr. Freke's road, at the old Nursery-gate, a new Belgravia has been constructed. The houses are large, and the roads are raised in causeways, at right angles with the Park-road, giving factitious elevation to ranges which present enormous bastions to the dwindled domiciles of Brompton-square, and the various squares and crescents thereabout. All access to the park is barred out, although Brompton-square, which till lately was open to the aroma of the Serpentine, and other verdant influences of the Hyde, is but three hundred paces from the park railing.

The modern mimic St. Germains is wholly secluded. Princes-gate, Ennismore-place, and other accumulations, in lofty brick, the habitations of the upper ten thousand, are all *cul de sacs!* You must go out at the same gate whereat you entered, and with just the same dignity. This may be a good arrangement, but if Mr. Jackson and Mr. Freke, both very extensive builders, are right in their modes of laying out noble roads—roads 100 feet wide, and which lead from the park to various parts of the suburbs,—how can the *turn-again* plan of Princes-gate (as the whole quarter is called) be also right?

Several meetings have been held by the aggrieved householders of Brompton-square and the vicinage, to obtain a right of way by Ennismore-place to the park. A very small opening of about 10 feet still remains for a footway; but the lucky planner of Princes-gate got hold of the opening at the end of the square, built another bastion, towering 70 feet above the square—something of a "fanal," with a front to the park, a sort of temple of Janus, with as ugly a front as could be contrived to Brompton-square; in which also he has erected coach-house and stables, not leaving a foot for garden—no, not for half a yard of cabbage.

Must the Bromptonians suffer the Princes-gateians to make their square a stable lane! Will they allow their curb-stone and pavement to be cut away? (there is an iron post, too, just in the centre of the stable entrance): must they allow Mr. Elger to depreciate their dwellings 30 per cent. whilst he enhances his own perhaps by 5 per cent. only?

There is an authority of modern creation. Let those concerned convene a full meeting—let the Thurlorians, Oratorians, and the Montpellierians, unite in one common assault against the invader—let them first shut that stable-door, and then apply, on the plea of public health and utility, for a foot thoroughfare to the park, and they shall be aided by all the householders from No. 1 to No. 50,

BROMPTON-SQUARE.

PRINCIPAL WORKS CHOSEN TO THIS TIME BY PRIZEHOLDERS IN THE ART-UNION OF LONDON.

From the Royal Academy. — Landscape, with Sheep, G. Cole, 50*l.*; Welsh Fireside, D. W. Deane, 50*l.*; First Buttons, D. H. Friston, 30*l.*; Ferry-boat on Loch Leven, W. Luker, 26*l.* 5*s.*; Forest Stream, E. Gill, 30*l.*; Surrey Cottage Scenery, J. J. Wilson, 20*l.*; The First Scrape, R. Farrier, 20*l.*; A Favourite Retreat (North Wales), F. W. Hulme, 20*l.*; Dunkirk, A. Herbert, 30*l.*

From the Royal Scottish Academy.—Holy Island (Lamlach), W. H. Paton, 50*l.*

From the British Institution.—An Old Bridge near Pella, G. E. Hering, 200*l.*; Scene from the "Gentle Shepherd," W. Underhill, 60*l.*; Ruse de Guerre, J. M. Joy, 35*l.*; Wayside Inn, R. Brandard, 25*l.*; A River Bit, J. Dearle, 25*l.*; A Farm Pond, J. Stark, 20*l.*; A Roman Peasant Girl, T. Gooderson, 20*l.*; Dean Swift and the Messenger, T. P. Hall, 40*l.*

From the Society of British Artists.—Medmenham Abbey, H. J. Boddington, 60*l.*; The Youthful Gamester, J. Clater, 60*l.*; A Summer Morning, H. J. Boddington, 60*l.*; On the Conway, J. C. Ward, 50*l.*; An English Lane, H. J. Boddington, 40*l.*; The Pilgrimage Church of Bethanan, A. F. Rolfe, 35*l.*; Scene near Mysybuth, J. Tennant, 50*l.*; On the Look-out, J. Henzell, 25*l.*; A Welsh Ford, G. Shalders, 25*l.*; Goldfinch and other Birds, Mrs. Withers, 20*l.*; Highland Courtship, Miss Macleod, 25*l.*; A Fresh Breeze, J. Meadows, 20*l.*; Water-mill (Dolgelly), A. Barland, 20*l.*

From the National Institution.—The Mid-day Meal, H. B. Willis, 100*l.*; Early Morning, H. B. Willis, 60*l.*; Dutch Vessels entering Port, T. S. Robins, 50*l.*; Wild Flowers, Mrs. Withers, 50*l.*; The Woodman's Repast, H. P. Parker, 40*l.*; Surrey Scenery, W. Lukeing, 25*l.*; Rouen, A. Montague, 20*l.*; The Last Gleam in the West, H. B. Grey, 20*l.*

From the Water-Colour Society.—The Evening Gun at Castle Cornet, J. P. Naftel, 25*l.*

From the New Water-Colour Society.—The Vegetable-market (Venice), J. H. D'Egville, 26*l.* 5*s.*; Turf-boats approaching a Lock, M. A. Hayes, 21*l.*

THE METROPOLITAN BUILDING ACT.

Building for temporary Purposes.—Pray inform your readers that such buildings are not permissible unless constructed in every particular according to the Act. Under the shelter of this plea all sorts of irregularities are constantly committed:—the Act, it cannot be too widely known, does not recognise such erections, as they are often made permanent.

Cellar Arches and Vaults.—The Act makes notice to the district surveyor when vaults are to be built imperative, and regulates their construction: it also imposes a penalty of 20*l.* for every default. How is it, therefore, let me ask, that a builder of repute, employed on a large Government work too, has put in the whole of the arches for the Farringdon-street extension in default of the proper notice? The cumulative penalties would amount to a considerable sum.

District Surveyors' Fees.—Your remark that work done in default of proper notices is greatly on the increase by small jobbing builders, is very correct: this is so to a great extent: they will take work which respectable builders will not, undertaking to chance the fee and the work being found out. Some timely inflictions of the 20*l.* penalty, or in lieu thereof the incarceration of the defaulters, will be found useful. Since the abolition of the treble fees, a very salutary check, a great increase of work without proper notice is observable.

CRITO.

METROPOLITAN BOARD OF WORKS.

AT a meeting on the 16th inst. on the bringing up a report upon the "Duties of the Board under the Building Act," recommending that an officer be appointed for the purpose of verifying the plans and statements accompanying applications to the Board under the Building Act, and to assist the superintending architect in his duties, and that that officer be paid an annual salary of 150*l.*—

Mr. Leslie thought the Board were taking upon themselves duties which did not belong to them; and that under the 76th section of the Local Management Act, the province in such cases was with the district boards or vestries.

Mr. Turner moved an amendment to the effect, "That an additional clerk be appointed in the department of the superintendent architect;" and this was carried.

A stormy discussion ensued upon two paragraphs in the report, viz.—"That the application of Messrs. Turner and Sharpin, for permission to bring out the fronts of two houses, Nos. 63 and 64, Pratt-street, Camden Town, as shown by the drawings accompanying such application, be not granted."

This recommendation was denounced by Mr. Wilkinson and Mr. Corrie, the representatives of St. Pancras, as an act of injustice; and some strong comments were made upon the conduct of those who had erected a public-house and other buildings on the St. Martin's Cemetery, in Pratt-street.

The paragraph of the report was ultimately confirmed.

The second paragraph was that the application of Mr. J. Tarring, for permission to extend the porch of Sussex Villa, Sheffield-terrace, Camden-hill, Kensington, as shown upon the plan accompanying his application, be granted.

This proposal, after some opposition on the part of Mr. Hawkes, was also carried.

STATE AID IN FORMING LOCAL MUSEUMS OF ART.

A CHANGE has been made recently in the mode of examining the works of the Schools of Art, which is of a self-acting character, and calculated to assist materially in forming local Museums of Art. It has been determined that once in each year an inspector from the department, shall visit each school, hold an examination in certain of the early stages of the course: and, in conjunction with the head master, assisted, if necessary, by a master from one of the nearest schools, adjudge local medals and rewards. The principal and advanced works so rewarded will form a General or National Collective Exhibition, and be inspected by the art superintendent, who, in concert with examiners appointed by the board, will adjudge national medals to the best, in mutual competition. The collection will afterwards be sent round to some of the larger provincial towns. The works which have obtained first medals in the local competitions, being all collectively exhibited, will be examined by the art superintendent, aided by other appointed examiners, and medals awarded to the works successful in this second competition. For every medal awarded in the National Competition, the school in which the successful student was under instruction, will be privileged to select, from a list, works of art value 10*l.* The result to every school will, therefore, be proportioned to the advance of the students, and it will be by such means that the nucleus of a local museum may be established. Thus each local school will share in the State assistance, according to merits. The central authority, instead of giving the assistance as formerly, will be merely the executive of the self-acting demands of each local school.

GAS.

Weedon.—A numerous meeting was held at Weedon, on Tuesday before last, for the purpose of establishing a company for lighting this place with gas. Mr. Sharp, gas engineer, attended with estimate, &c. The capital proposed was 4,000*l.* divided into shares of 10*l.* each, nearly the whole of which were subscribed for at the meeting. A provisional committee was appointed, and it was agreed at once to proceed with the erection of the works, on a site provided by the Government. The great obstacle, hitherto, has been the difficulty in procuring the sanction of Government to light the barracks. The whole of the Government establishments are now to be lighted.

Alleged New Method of Generating Illuminative Gas.—The Boston newspapers state that an inhabitant of that city has got an apparatus for generating gas, simply from zinc and hydro-chloric acid, and without external heat. This apparatus, it is declared, yields a gas of great purity and brilliancy; as contrasted with coal gas, the same quantity yielding twice the illuminating power. The whole apparatus, it is added, is contained in a cylinder 3 feet in height and 16 inches in diameter; and a machine capable of generating sufficient gas for eight lights requires looking to and feeding only once a month, or less. That zinc and spirit of salt will yield a brilliantly illuminative gas is more than doubtful. The gas so generated is merely hydrogen, which (usually at least) yields very little light. Some time since, however, it was alleged that, by a catalytic process, it was made highly illuminative; and it remains to be seen, perhaps, whether the gas of which Boston is boasting be something of this sort, or a mere "flash in the pan."

Hansor's Oil Gas.—Mr. J. Hansor, of Vauxhall, is said to have succeeded in obviating the old difficulties in the way of preparation of gas from oleaginous substances. His process is described as consisting in the vaporization of the material in small retorts at a heat just sufficient for that purpose, and then of converting into gas, at a somewhat higher temperature, the vapour, which flows in hot volumes from the small retorts into and through a large one. The flues are

so proportioned that the proper heat of each retort is raised and equally sustained at same time. Each retort has its own flue, and each flue is regulated by a separate damper, so that the temperature of each retort may be rendered higher or lower at pleasure. By means of test-pipes and stop-cocks, the operator knows exactly when vapour is generated in the small retorts, and gas in the large one; and thus, by attention to two or three simple directions, can conduct the process with satisfactory and uniform results.

Gas-Combustion and Gas-Meting — Mr. L. Thompson, M.R.C.S. last week delivered a lecture to the Gas Fitters' Mutual Association on "Combustion" as connected with gas, illustrating his positions with practical experiments. Under certain circumstances, there was a peculiar smell with gas, particularly Cannel gas: this odour, the lecturer remarked, arose, not from the escape of gas, as generally believed, but from a peculiar compound, generated in its re-solution into water and carbonic acid, and to obviate which the ventilation should be proportioned to the amount of gas consumed. The lecturer concluded by introducing to the meeting an invention connected with the consumption of gas, leaving the inventor, Mr. Sanders, to describe it. This invention consists of an oblong trough, adapted to the size of the meter, in which is placed a semi-circular figure, immersed in water, and which revolves on its axis, and *maintains the water-level*, upon the accuracy of which depends the correctness of the gas register. The only drawback to its universal introduction among gas consumers was considered to be the liability of the water to freeze in winter, and thus prevent its efficient action, an objection, properly speaking, attributable to the wet meter itself rather than to the new invention, which, on the other hand, is said to obviate the usual objections to the wet meter.

CANDIDATES FOR DISTRICT SURVEYORSHIPS.

AT the last meeting of the Council of the Royal Institute of Architects, certificates of competency, after due examination, were sealed for the following gentlemen:—Mr. Charles James Badger, Mr. Henry Astley Darbishire, Mr. William Richard Gritten, Mr. Sidney Godwin, Mr. Henry Hart, Mr. Walter Robert Kinipple, Mr. Henry Parsons, and Mr. Henry Stephen Ridley.

COMPENSATION CASE.

Lord St. Germains against the Mid-Kent Railway Company.—On Wednesday, the 21st inst. an inquiry was held at the Black Horse, Lewisham, before the assessor for the sheriff of Kent, to assess the value of five and a quarter acres of land, abutting on the road from Lewisham to Forest-hill. Mr. Alexander and Mr. Liddel appeared for the claimant, and Mr. Bovill and Mr. Holloway for the company. The plaintiff claimed 3,300*l.* and in support called Mr. William Tress, who valued the property at 2,709*l.* 7s.; Mr. Chinnock, 2,560*l.*; and Mr. Charles Smith, 3,180*l.* The surveyors on behalf of the company were Mr. Ritchie, Mr. C. Lee, Mr. E. Roberts, Mr. Withall, and Mr. Owen, but they were not called. The jury, after an hour's consideration, returned a verdict of 1,100*l.*

OXFORD ARCHITECTURAL SOCIETY.

ON Wednesday in last week the fourth of the series of lectures on Foreign Architecture was read by Mr. James Parker. He said that Brittany had advisedly been chosen as a subject for a separate paper, inasmuch as it seems to have stood alone, isolated from the rest of France, in its manners, customs, history, and, to some extent, in geographical position. He showed that it had always been, as it is now, behind hand in the cultivation of the arts and sciences. That during the whole of the flourishing epoch of Architectural History in other countries, Brittany had no architecture which it could call its own, and that it was dependent both on England and France for its styles and architects. It was not till the sixteenth century, when, on the marriage of Anne of Brittany, it was united to France, that the country seems to have awoke from its sleep. Then, when, in every village, they commenced building churches, it struck out a style different to that in any other country of Europe. He described Brittany, always looking to the past, as battling with the Renaissance period; and showed that when the Classical style did penetrate, a mediæval character was given to them. In the course of the lecture, Mr. Parker dwelt some time on the "Ossiaires" and "Calvaires," which are the characteristic features of the Breton churchyards, and he illustrated his subject by mentioning many of the interesting customs of the Bretons, showing their reverence towards their dead, and their respect for their cemeteries.

Miscellanea.

THE TORQUAY BRANCH OF THE METROPOLITAN ASSOCIATION FOR IMPROVING THE DWELLINGS OF THE INDUSTRIOUS CLASSES, have recently opened their first building, consisting of a dwelling-house for fifty single men; it is situated in Queen-street, and is in the Italian style, built of the local limestone, with brick and ashlar-tooled limestone dressings, and covered with a deeply-projecting roof of Italian tiles, surmounted by a lantern. The house consists of one general sitting-room, kitchen, and offices; each man has a dormitory and safe for food to himself, and the utensils for cooking, &c. are all provided. The establishment is regulated by similar laws to the London one. The charge made is 2s. per week, including cooking, washing, &c. The building is fitted up with Jennings's patent lavatories, gas and steaming apparatus, and is ventilated by a series of flues in the floors and walls. Accommodation is provided for a married man as superintendent. Mr. Edward Appleton, of Torquay, is the architect, and the works have been carried out by Mr. George Stevens, builder, of Newton Abbott.

THE WORKS IN PROGRESS AT WINDSOR CASTLE.—Of late there has been active progress made with the various improvements now in progress at Windsor. The East Terrace of the Castle is being paved with Seyssel asphalte of Pyrimont, prepared by Claridge's Asphalte Company. At one end of the Terrace is a steam engine, which drives three large caldrons, containing each about one and a half ton of materials. The principal ingredient put in is a bituminous limestone, in powder, to which is added mineral tar and grit of uniform size. The caldrons being over strong fires, the contents are kept unceasingly agitated by machinery, which, in three hours, amalgamates the ingredients, in a semi-fluid state. In this condition the asphalte is run into iron trucks, on a portable railway, and rapidly despatched to the workmen on the Terrace. The thickness of the pavement is determined by strips of wood, against which the material is poured, and before it becomes set the workmen bring the surface uniform, so as to make it appear almost without a joint. The channels for water are formed in the same material, which, being impervious to water, is well suited to carry off the drainage. This asphalte has also been used upon the roofs and other portions of the Castle, and some years back the Royal Kennels were paved with it.

NEW MILITARY HOSPITAL ON THE SOLENT.—On Monday last the Queen laid the first stone of a large military hospital, about six miles from Southampton. It will include accommodation for 1,000 patients, and will cost, it is thought, about 200,000*l.* We shall give views and particulars in another number, and make it the occasion to offer some remarks on the subject. Mr. Mennie, the surveyor of the Royal Engineers' Department, in Pall-mall, is the architect.

A CHEAP SELF-REGISTERING MINIMUM THERMOMETER.—The self-registering minimum thermometer, made by Messrs. Negretti and Zambra, for horticultural purposes, will supply a want. It consists of a glass tube mounted on a strong zinc scale, the bulb and part of the bore of which is filled with perfectly pure spirits of wine, in which floats freely a black glass index. A slight elevation of the thermometer, bulb uppermost, will cause the glass index to pass to the surface of the liquid, where it will remain, unless violently shaken. On a *decrease* of temperature the alcohol recedes, taking with it the glass index: on an *increase* of temperature, the alcohol alone ascends in the tube, leaving the end of the index *farthest* from the bulb indicating the lowest temperature that has taken place during the absence of the observer.

EXHIBITION AT THE ROYSTON INSTITUTE.—At the new building lately erected for the Royston Institute, an exhibition of objects illustrative of science and art, and comprising 900 specimens, was opened on Monday in last week. Royston is a town of not more than 2,000 persons, men, women, and children. The Institute, nevertheless, has 240 paying members, or about one in every eight of the whole population, as remarked by the *Hertford Mercury*, which gives a full account of the Exhibition, and a report of a lecture by Mr. R. Hunt, F.R.S. on its various objects. Of the building itself in which the exhibition is being held, the same paper remarks that "there is no town in the county of Hertford, and probably no town in the kingdom, with a population five times that of Royston, which possesses such a building devoted exclusively to literary, scientific, and educational purposes, and with a museum, library, reading-rooms, class-rooms, and a spacious lecture-hall."

FALL OF A BRIDGE NEAR MONTREAL.—The new suspension bridge over the Falls of Montmorency, gave way on 30th ult. and the whole structure was carried over the falls. A man and a woman were on the bridge, with a horse and cart, at the time, and were carried over the falls and lost their lives.

FORGERY OF BANK-NOTES.—Mr. H. Bradbury delivered an interestting lecture lately at the Royal Institution, Albemarle-street, upon the "Manufacture of Bank-Notes, in connection with the subject of Forgery." The audience was numerous and distinguished; the Duke of Northumberland presiding. The lecturer said it was his object principally to direct attention to the engraving, as the most important feature in the manufacture of bank-notes, because upon that depended their security in the eyes of the public. The main feature of the note, the engraving and its security, depended upon the vignette: the higher the quality of the artistic impress, therefore, which this vignette carries, the greater the security of the note. The vignette derived its great value from being the uncounterfeitable seal of the note,—uncounterfeitable, because its individuality could not be imitated. However similar, there was a difference in the human countenance: however similar, there was a difference in handwriting; and if any number of the most eminent engravers were to endeavour to copy each other, it would be detected by a casual examination. The Bank of England note, the lecturer continued, had always been characterised by simplicity, but carried to an extreme in the opposite direction. In its present form it was unworthy of the bank and nation. In the case of the Anastatic and the photographic processes, the antidote consisted in the adoption of printing in different colours. If the water-mark of the bank-note were backed by excellence of art and engraving, it might be regarded as unforgeable; but if this should be found not to be the case, then it should be imperative on the Government in committee to resolve this question, or offer a reward for its solution.

HACKNEY.—Schools, to accommodate sixty girls and sixty boys, with offices attached, have just been completed for the committee of the New Gravel Pit Chapel, Hackney, at an outlay of about 420*l.* Mr. R. W. Wright was the architect; and the works have been carried out in a satisfactory manner by Mr. W. Harwood, of Hackney, builder.

AN OPPORTUNITY FOR A SOCIETY.—It may be useful to say, that Societies requiring a large room of meeting have an opportunity at this moment of securing one in association with the Royal Institute of British Architects, who are looking out for some literary or scientific society to join with them in taking very eligible premises, now vacant near the best part of Piccadilly.

RUDHALL, THE BELL-FOUNDER.—"In the year 1684, one Abraham Rudhall, of the city of Gloucester, brought the art of bell-founding to great perfection. His descendants, in succession, have continued the business of casting bells; and, by a list published by them, it appears, that at Ladyday, 1774, the family, in peals and odd bells, had cast to the amount of 3,594. The peals of St. Dunstan's-in-the-East, St. Bride's, London, and St. Martin's-in-the-Fields, Westminster, are in the number." The above extract may perhaps form another note to the many observations in your journal on bells and bell-ringing. —W. P.

RAILWAY RETURNS.—The official statements of railways in the United Kingdom for the second half-year of 1855, show that the total capital sunk in railways was 287,271,405*l.* the amount of interest and dividend in respect of it for the half-year being 5,934,589*l.* or at the average rate of 4*l.* 2s. 7½d. per cent. per annum. Last year the rate of interest and dividend was 3*l.* 19s. 9½d. per cent. per annum. The increase in capital during 1855, was 10,489,421*l.* The total traffic receipts for the half-year amounted to 10,915,770*l.* the working expenses to 5,188,473*l.* or 47 53 per cent. leaving a profit on the working of 5,727,297*l.* or 52·47 per cent. of the receipts. The capital of twenty railways upon which no dividend was paid on the ordinary shares amounted to 25,707,077*l.* of which 12,922,947*l.* consisted of mortgage and preference capital, and 12,784,130*l.* of ordinary capital.

THE DWELLINGS OF THE INDUSTRIOUS CLASSES.—An association has been organised in Liverpool, under limited liability, for the improvement of the dwellings of the industrious classes. It is called "The Liverpool Labourers' Dwellings Company," to which has been given the first certificate ever registered under this Act. A plot of land had been purchased in Northumberland-street, Toxteth-park.

COLOURED GLASS WINDOW-FRAMES. — Another novelty in the glass window-frame invention has been produced by Messrs. Lloyd and Summerfield, of Birmingham. They have just completed a frame about 10 feet high, of transparent *coloured* glass, for a drapery establishment, at Northampton. The shafts are blue, and the caps and bases ruby, ornamental rings of amethyst being added. Each compartment, instead of being square, as in the specimens previously noticed, is surmounted by a depressed arch. The door plates will be enclosed in a frame-work of pale green glass.

THE NEW MUSIC HALL, BIRMINGHAM.—The New Music Hall, in Birmingham, of which we spoke some time ago, is nearly finished. The style is Gothic. The material used is ordinary brick-work with stone dressings. The hall itself is in the clear of the walls 111 feet 6 inches in length by 76 feet in width: on each side are saloons or refreshment-rooms of ample size. There are two tiers of galleries surrounding three sides of the building, with an orchestra at the east end, which leaves the clear space on the floor 76 feet by 50. The arrangements will afford sitting accommodation for 1,840 persons, thus disposed of;—720 on the floor, 420 in the lower gallery, 580 in the upper gallery, and 120 in private stalls to be arranged on either side the orchestra. The stalls or lower galleries are over the saloons, and project into the hall four feet on either side, with arched brackets under the projecting parts of the joists and in the saloons. The upper gallery is supported by iron columns, running up to receive the principals of the roof, which span the entire width of the building. The ceiling in its highest part is 70 feet from the floor: it presents the appearance of an open-timbered fourteenth-century roof, constructed entirely of yellow pine, stained and varnished. Projecting from the sides of each principal of the roof are traceried brackets, intended to support twenty polished brass coronæ: these brackets are to be banded to the arched parts of the principals with wrought-iron ties, filled in with brass illuminated foliated work. Considerable progress has already been made in the decoration. It consists of the primitive colours—red, blue, and gold as a basis: the compartments of the ceiling are painted ultra-marine blue—a light pattern on a dark ground, with red flowers interspersed. The timbers (consisting of the principals, arches, tracery, rafters, &c.) are relieved in colour with diapery patterns on the lower side: the octangular iron columns have their capitals picked out in blue, red, and gold, with the shafts diapered in two browns, lined with gold lines. The gallery fronts are composed of iron-work, and are finished in a sober colour, with leaves and bands in gold. The wall spaces behind the stalls and other parts of the hall are to be ornamented with a foliated decoration in various colours. The builder is Mr. Briggs, and the architect Mr. James Cranston, of Bennett's Hill. The entire cost of the hall, with its furnishings, is estimated at 10,000*l.* raised in 10*l.* shares.

DESIGNS FOR CAVALRY BARRACKS.—With reference to our notice of designs for cavalry barracks, we are asked to add that the authors of the fifth design chosen, and marked Balaclava, are Messrs. Ellis and Read.

STAINED-GLASS WINDOWS. — Some stained-glass windows have been recently fixed in Whitnash Church, Warwickshire, by Mr. Holland, of St. John's, Warwick. The east chancel window contains three subjects, namely, the Baptism, Last Supper, and Ascension, with canopies and daisy border, emblematical of St. Margaret, to whom the church is dedicated. The tracery is filled with angels, in an attitude of prayer, bearing the emblem of the Trinity, &c. A side window contains the following subjects in panels:—Christ blessing little children; Timothy being taught the Scriptures; Lamb and banner, and Dove descending. Mr. Holland has also fixed a stained-glass memorial window in Southam Church, Warwickshire, containing the following subjects:—The Ascension and Acts of Mercy; Christ healing the Sick; Almsgiving, or relieving the Pilgrim, illustrating the text—"I was hungry, and ye gave me meat; I was thirsty, and ye gave me drink; I was a stranger, and ye took me in."

CHELTENHAM SCHOOL OF ART.—The name of the master of this school is Mr. James P. Knight; not Wright, as stated in our last.

FOOD, CHEAP AND GOOD.—Dr. M'Cormack, Consulting Physician to the Belfast Hospital, &c. and an old correspondent of the *Builder*, has circulated some useful remarks on this subject in a printed form. He recommends the formation of bread from dough made with water impregnated with carbonic acid got from chalk instead of formed in the dough at the cost of the flour. This flour, he recommends, should be composed of the whole of the grain, merely stripped of husks or extraneous envelopes, and containing all its bran as well as all its flour, with no bolting or screening after grinding. On a large scale, as for workhouses, or for Government purposes, the dough should be placed in a machine, the counterpart of the common brick and tile machines, for delivery of the loaves as fast as they can be placed in permanently heated ovens, and there so arranged as to become crusted all over like the French loaf. This he regards on the whole as the best and cheapest mode of baking yet devised. In small families he advises the use of a rotating sheet iron oven before the fire for the baking of this kind of bread. Some useful instruction as to the preparation of cheap and good stews for the poorer classes is also given.

TESTIMONIAL TO DR. HASSALL.—A testimonial has been presented, at a dinner, to Dr. Hassall, whose services to the community, as the detector of adulterations in almost every article of nutriment, whether solid or liquid, are already well known and acknowledged. The testimonial was designed from Milton's "Paradise Lost," by the Rev. G. M. Braune, M.A. It represents the Angel Ithuriel, clad in armour, touching, with his spear, Satan, who, having assumed the shape of a toad, sat close to the ear of Eve, tempting her. The testimonial stands about 3 feet 6 inches in height. The figure was modelled by M. Frerèt. It might be read as the Genius of Good destroying Evil, in the shape of a toad, with the point of Truth.

WARMING APPARATUS IN FARNBOROUGH CHURCH, KENT.—A constant circulation of the air of a building through the air-drain, and its concentration on the stove, appear to be the principle of this apparatus. The warm air ascends, expands into every part, and gradually descends, as it cools by contact with the walls and windows, flowing down the air-drain, to be again warmed, and thrown up into the church. It is not necessary to conduct it to the extremities of a building, because the coldest air is always flowing down the drain; and the warm air necessarily taking its place, the warmth is diffused with very little variation of temperature. The construction of the stove is simple and inexpensive: it consists of an iron cylinder, cast in two pieces, 5 feet long by 2 feet 6 inches in diameter: the fire-bars are placed a little below its centre, and are lined with Welsh lump fire-bricks. The stove is fixed in an excavation under the aisle of the church. It has three gratings; the first serving the double purpose of a trap-door to the stoke-hole, and an air-draught to the fire: the second is placed over the stove, and admits the warm-air into the church; and the third, at a distance of 24 feet, is put over the air-drain, which is conducted down to the under part of the stove in the direction of the arrows in the section. The draft is regulated by a small screw-valve in the lower furnace-door, and no damper is used in the chimney. The fire is lighted on the Saturday, and keeps in during the night without an attendant, and it is never touched during the services. In the construction of the air-drain care should be taken that it has no sharp angles: it should be large—2 feet 6 inches by 2 feet 6 inches at the least. Sufficient air only for combustion is admitted by the screw-valve, and so very little heat escapes into the chimney, and the stove is never hot enough to burn the air. The apparatus was put into the church when it was restored last autumn, and has been found, we are told, to answer remarkably well.

FIRE-PROOF MATERIAL FOR FURNACES.—Mr. David Hill, of Tipton, Staffordshire, forge-manager, has patented an invention for "preparing a material capable of resisting fire, and especially suitable for the interior of puddling and other furnaces." In this preparation, the inventor employs materials that have been subjected to the greatest heat that furnaces excite. The combination consists of limestone and ironstone, or the cinder from furnaces, which are melted together and cast into moulds. The proportions of materials may be varied, but the following are preferred;—one-sixth part of limestone, and two-third parts of ironstone or cinder. These are mixed together and fused. Mr. Hill's experience as a forge-manager has no doubt taught him that the vitrified slag of the furnace is well adapted to resist the heat by which it has been melted, and in this respect it accords with the observations of Mr. Truran, that the vitreous covering of the bricks protects them from the farther action of fire. The specification of the invention is one of the shortest on record: the descriptive part and the claims only occupy twelve lines.

NEWS FROM NEW ZEALAND. — The Hutt-bridge at Wellington, New Zealand, a connecting link between Wellington and the river Hutt, has been opened for traffic. The following details are from the *Australian and New Zealand Gazette*:—The length of the bridge is 210 feet, the width of roadway 14 feet. The bridge is supported on four principal piers and two light embankment piers. The main piers are constructed of two parallel rows of piles (five in each row), driven on an average 14 feet below the bed of the river. Above the water-line these piles are firmly connected together by double waling pieces, planking, bolts, &c. so that one pile cannot be broken without breaking five others. The span between the main piers is 50 feet; the length of the main piers, 20 feet; width of main piers, 3 feet. The roadway is carried over the piers on girders 56 feet long, 18 inches by 15 inches, in one solid piece of totara, strengthened by two brackets, 15 inches by 10, resting on and secured to the caps of the main piers: to prevent any deflection, a king and queen post truss framing is constructed over each garden, which relieves the centre of the span and discharges the weight on the heads of the piers. The design as a whole appears heavy, but that it will withstand the heaviest flood there can be little doubt. The design is by Mr. Burt, who superintended the erection. The amount of the contract was 1,450*l.* The contractor was Mr. Carter. A dinner was given by the contractor at the opening to about forty of the workmen employed by him in town and on the works at the Hutt.——The same authority gives some details as to the Sydney College, New South Wales. The pile of building which will form the college was progressing satisfactorily. It is intended that the style and arrangements of the entire building should resemble Oxford, and it is expected that the college will be completed and occupied before the termination of 1856. This work had up to last advices cost 20,000*l.*; and the estimate for the entire construction was 140,000*l.*; but the diminution which has taken place since that calculation in the price of labour of all kinds supports the opinion that the whole expenditure will not exceed 120,000*l.*

PHOTOGRAPHY UNDER WATER.—Mr. W. Thompson, of Weymouth, gives an account, in the *Journal of the Society of Arts*, of means he adopted for taking a photograph of the bottom of the sea, in Weymouth Bay, at a depth of three fathoms. Mr. Thompson anticipates that this will be a ready and inexpensive means of arriving at a knowledge of the condition of piers, bridges, piles, structures, and rocks under water.

"CHRISTIAN ARCHITECTURE OF IRELAND."—On the 6th inst. a lecture was delivered to the members of the Highworth Institute and others, by Mr. Edward W. Mantell, of Swindon, architect. The subject was "The Early Christian Architecture of Ireland." In remarks on the early Irish churches, the lecturer noticed their general smallness in size, the larger in form resembling the Roman Basilica, the smaller only a simple oblong quadrangle, without any chancel, their roofs entirely of stone, windows narrowing as they rose in height, small, and splayed, or widening inwards, to afford more light, tops triangular or pointed, square, and semicircular. Glass seems to have been then unknown, or at least not used. Doorways for the most part quadrangular and without cement, occasionally arched at top, and but seldom ornamented. All these structures are of a plain character. Yet Ireland is not without a specimen of a more decorated architecture: there may be seen in the sequestered valley of Glendalough, the City of the Seven Churches, the Balbec of early Christianity in Ireland. They seem to have been founded about the latter end of the sixth or the beginning of the seventh century. It would seem, therefore, that a decorative style existed here, as did also civilization and learning, prior to these being introduced into England.

PROFIT ON COAL CULM, OR WASTE.—A person who not long since worked as a common collier in a mine near Glasgow had lately in his possession a mound of pit sweepings, or *débris*, which could scarcely be dignified with the name of coal-dross, and which covered an area of three acres, and consisted of about 80,000 tons. The extensive miners' strike in Scotland caused so great a scarcity of coal and dross, that the whole of this mound of sweepings was disposed of at prices ranging from 3s. to 13s. a ton, yielding the "proprietor" a clear profit of 26,000*l.* for stuff not usually worth carting away! It has, moreover, it is said, been discovered that, mixed with refuse coke from gas-works, this *débris* is better adapted to furnaces than the best coal-dross, producing a greater heat without half the smoke and waste. The *Glasgow Mail*, moralizing on this remarkable "transaction," is of opinion that "it's an ill wind that blaws naebody guid."

SHAM TENDERS.—For a concert-room, in Knightsbridge, advertised in our columns, eleven tenders were sent in, last week. Seven of these ranged from 797*l.* to 623*l.* (Messrs. Parry); the remaining four from 468*l.* 10s. to 420*l.*! Of these last not one of those who tendered was found to undertake the work: the tender being mere guess work, or worse. Ultimately, Messrs. Parry's tender was accepted. Some means should be adopted to check such conduct.

TENDERS

For the Central London District Schools, to be erected at Hanwell. Messrs. Tress and Chambers, architects:—

Jay	£43,480	0	0
Kelk	43,098	0	0
Ashby and Horner	42,650	0	0
Piper and Son	42,497	0	0
Macey	41,670	0	0
Lee and Son	41,440	0	0
Myers	40,800	0	0
Brown	39,887	0	0
Holland	38,884	0	0
Downes	38,260	0	0
Kirk and Parry	38,881	0	0
Wilson	38,598	0	0
Crook	37,875	0	0
Ashby and Sons	37,810	0	0
Hayward and Nixon	37,745	0	0
Lucas	37,400	0	0
Brass	34,968	0	0